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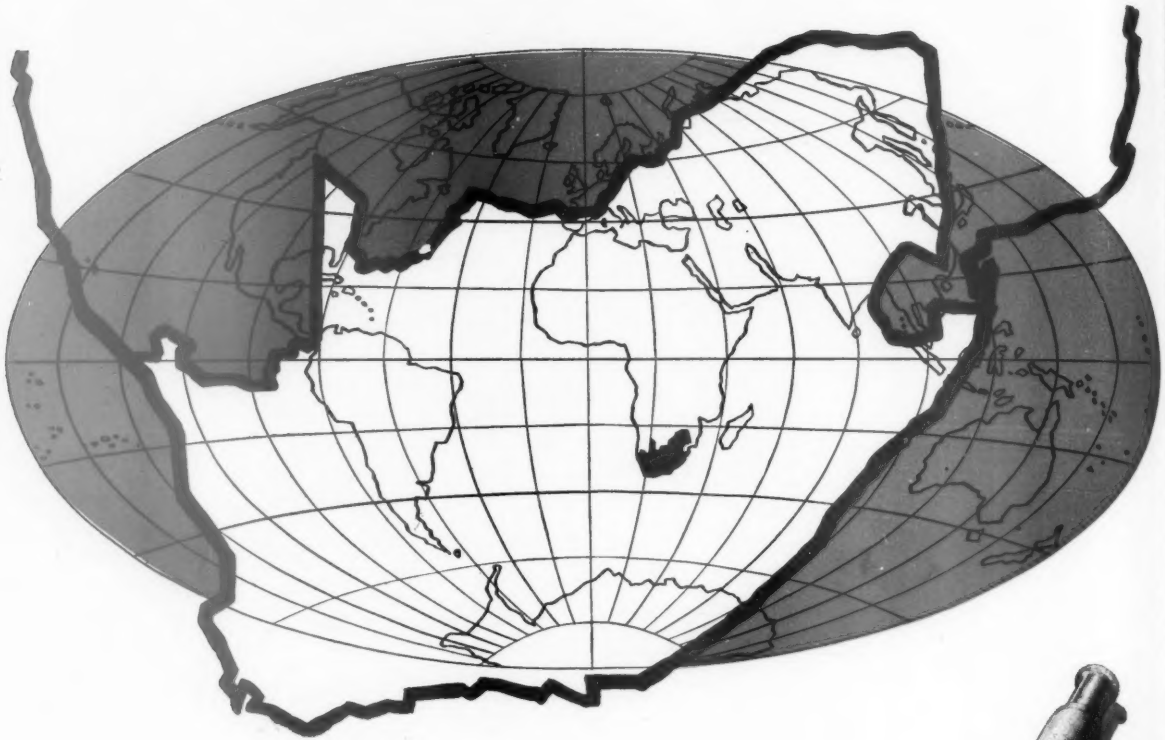

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Higher Railway Charges

THE British Transport Commission has been forced by its constantly increasing costs—not least by the extra £5,000,000 added to its working expenses by the recent addition of 7s. 7d. a ton to its coal prices—to announce that the majority of railway freight charges will be raised by 10 per cent as from August 1. The Commission has invoked the special statutory procedure for temporary authorisation of an increase in the maximum charges fixed by the Railway Merchandise Charges Scheme, but small consignments by freight train will still be charged at the recently published scales which came into use last Monday. The Commission has had heavy increases in costs, and it must be remembered that the last rises in railway freight charges, which took effect from April 23 last year, were by no means as great as those which the management felt to be necessary at the time. Railway charges generally compare very favourably with the prices of other commodities as regards the amount of increase since the war: passenger fares, for instance, are little more than double the 1939 figure. This charges decision, made public on the day that the new freight charges scheme officially came into force, must have been repugnant to the Commission, which is most anxious to keep its charges down to the lowest possible level consistent with its statutory obligation to pay its way. There is some substance in the argument that the new charges scheme should have been allowed time to show what it could do before charges were raised, but the Commission has suffered so often in the past from delays in bringing revenue into line with costs, and the need of extra revenue is so urgent, that it cannot be blamed for making immediate use of the special powers which, from last Monday, it now commands. The fact that British Railways, for the first time, had a working deficit in 1956 is a strong argument for higher charges. The necessity for quoting competitive rates is likely to mean that actual charges, in many cases, will not rise by the full 10 per cent. For some traffics which the railways are particularly anxious to encourage there may be no increase at all, but there is now a little more room for fixing charges within the framework of the maximum charges scheme. The 10 per cent increase must, unless the Minister allows otherwise, be approved by the Transport Tribunal in due course, but the case put to the Tribunal by the Commission need not necessarily be for the same percentage increase.

Rising Costs

THE working costs of the Commission have risen by £40 million in a full year since the last charges increase, £30 million of this being applicable to British Railways. The 1956 report, summarised, with tables, elsewhere in this issue, tells its own story. The rising costs of British Road Services and provincial and Scottish Omnibuses have been met to some extent by higher rates and fares, and Mr. Harold Watkinson, Minister of Transport & Civil Aviation, after consultation with the Transport Tribunal, has approved an application by the Commission for authority to increase charges for docks and inland waterways by 5 per cent and is making regulations accordingly. Since 1953, the Commission has had powers to increase ordinary second class main-line fares on British Railways from 1·88d. a mile to 2d. a mile, with proportionate increments for first class travel. These fares are now being reviewed, but the Commission has decided that no alteration will be made during the operation of the summer timetables—until September 15. The Transport Tribunal has before it an application to increase certain other British Railways fares—including season ticket rates—and London Transport fares, but whatever powers may be granted as a result of this application they will not be used until the autumn. It is already being said that the Commission action in increasing freight rates has ended the "price plateau," but there is little doubt that the recent higher coal prices imposed by the National Coal Board, and their effect on British Railways, have been the real deciding factor.

W.R. Mechanical and Motive Power Organisation

THE Western Region of British Railways has been considering a co-ordinated organisation designed to unify control of the mechanical and electrical engineering functions relating to locomotives, carriages, and wagons, and also to place responsibility for locomotive running on the Operating Department. As a first stage, certain changes became effective last Monday. The Chief Mechanical & Electrical Engineer, besides his previous responsibilities for mechanical and electrical engineering as to locomotives and outdoor machinery and subject to what is stated below, has assumed the former responsibilities of the Carriage & Wagon Engineer. The positions of Carriage & Wagon Engineer, Swindon, and District Outdoor Carriage & Wagon Engineer at London, Swindon, and Cardiff, have been abolished. The Motive Power Superintendent has been redesignated Running & Maintenance Officer, responsible to the Chief Operating Superintendent for all the previous functions of the Motive

Power Department and also for serviceability and maintenance of carriages and wagons while under the control of the Operating Department, subject to the overall responsibility of the Chief Mechanical & Electrical Engineer in these matters and for the necessary staff and equipment. The former District Motive Power Superintendents are redesignated District Running & Maintenance Officers, responsible at District level to the Running & Maintenance Officer for all the functions now assumed by the latter and mentioned above.

Wickham Lightweight Multiple-Unit Diesel Trains

THE multiple-unit diesel train sets built by D. Wickham & Co. Ltd., the first of which was selected by the British Transport Commission for exhibition at Battersea, are a constructional innovation for British Railways. To illustrate its interesting features the trailer car of the pair was shown in skeleton form. The welded body framework, built up of solid drawn square section steel tube, forms a complete stress-bearing box girder for which no underframe is required. This method has been used in Wickham railcars for many parts of the world and was developed to produce a lightweight car of great rigidity. The novel method of supporting the frame during manufacture is also worthy of note. Care has been taken to produce an internal finish which is easily cleanable. The almost complete absence of screwheads and moulding joints sets a high standard for this type of vehicle, whilst a general air of spaciousness is achieved by the scheme of decoration and, particularly, the shaping of the draught deflecting partitions at the entrance doors. In the design of the front end a successful attempt has been made to give the car some character. On completion the sets will go into service in the Eastern Region of British Railways.

Overseas Railway Traffics

RAILWAY receipts of South African Railways & Harbours in the week ended April 6, 1957, were £2,879,426 compared with £2,399,738 in the corresponding week of 1956. In general, receipts were higher in the following weeks than in 1956—the average for the nine weeks ended June 1, was £2,706,916 against £2,566,563 last year—but in two weeks they fell below the 1956 figures. The aggregate receipts from April 1 to June 1, were £24,362,243 against £23,099,067 for the same period of 1956. Aggregate receipts for harbours for the same period rose from £1,291,363 to £1,499,832 and airways revenue rose sharply from £1,182,533 to £1,805,527. Costa Rica Railway receipts for May were colones 1,980,389 compared with colones 1,654,483 for May, 1956, an increase of colones 325,906. The aggregate receipts for the 11 months July-May were colones 18,125,099 (18,726,730). Paraguay Central Railway receipts for the week ended June 7 were G2,035,998, a decrease of G295,189 on the corresponding week of 1956. Aggregate receipts from July 1, 1956, amounted to G90,819,167 against G69,127,764 for the corresponding period of 1955-56.

Progress in Luxembourg

WHEN the Luxembourg National Railways were created as an entity in 1946, there were 244 miles of standard-gauge line, of which 107 miles were double track, and 93 miles of metre-gauge single line. All the metre-gauge lines have gradually been closed down, the last, the 17-mile Luxembourg-Remich line, being shut in May, 1955. The traffic from these lines is handled by a fleet of 32 buses, five lorries, and a number of light vehicles. Four more buses and two extra lorries are being placed in service this year. The principal through route for international trains, Bettembourg-Luxembourg-Kleinbettingen, was opened to electric trains last September at the same time as the opening of the Belgian electrified service from Brussels via Namur to Arlon and that of the French National Railways service from Thionville to Metz. In Luxembourg station, where the Belgian 3,000-V. d.c. system meets the French 25,000-V. 50-cycle system, there is a convertible section which can be fed with either voltage. The main industrial route, Athus/Mont St. Martin-Esch-Bettembourg-Wasserbillig, with its branches, is being electrified on the 25,000-V. 50-cycle, single-phase system.

Diesel Traction Programme

A PROGRAMME of conversion to diesel traction has been in hand since 1949, and the Luxembourg National Railways intend eventually to replace steam traction by diesel on all non-electrified lines. As well as 28 railcars of various types, the railways have seven diesel-hydraulic locomotives and 12 diesel-electrics, four of which are of 1,600 h.p. and two of 825 h.p. Six further 825-h.p. locomotives are in course of delivery. The complete conversion is planned for 1959, when the work of electrifying the Athus/Mont St. Martin-Esch-Bettembourg-Wasserbillig line is to be finished. Before steam can be entirely replaced, the railways will need more diesel locomotives, and they intend to acquire 13 diesel-electrics of 925 h.p. in addition to the locomotives mentioned already. Diesel locomotives will work the non-electrified single-track Grevenmacher-Wasserbillig-Echternach-Ettelbruck-Noerdange-Pétange *ceinture* line, the Kautenbach-Wiltz line carrying local traffic to the Belgian frontier, and the other minor lines, as well as the northern main line from Luxembourg to Troisvierges, now being worked by the most powerful class of diesel locomotives in the C.F.L. fleet.

Safety Measures on Indian Railways

A RECENT broadcast from Bombay by Mr. M. Ganapati, General Manager of the Western Railway of India, should go far to reassure the Indian public as to the safety of railways. After classifying accidents, he analysed their causes, which, he said, were broadly due to failure of either staff, track, or mechanical equipment, or to trespass including level-crossing accidents, or other miscellaneous causes, such as falling from trains. Every accident, however small, is investigated by an enquiry committee, those to passenger trains involving loss of life, serious injury, or damage to railway property exceeding £1,500 being subject to statutory enquiry by a Government Inspector of Railways under the Ministry of Communications. The findings of enquiry committees and, in major accidents, the findings and recommendations of the Inspectors are carefully considered and promptly acted upon by railway administrations; such action included remedial measures and punishment of culpable staff. Every one of the 38,000 miles of track throughout India is examined daily on foot by an experienced keyman, and every three or four miles of track are systematically overhauled by a gang—an immense task in view of prevailing climatic and geographical conditions.

Staff Training

BESIDES the usual safety measures relating to the design and inspection of bridges, special watch, as Mr. Ganapati pointed out, is kept night and day in India on bridges subject to floods during the monsoon seasons, and in the case of both defective track and bridges, speed restrictions are enforced pending completion of necessary work. As to failures of locomotives and rolling stock, he emphasised the meticulous attention paid to maintenance in sheds and shops, but drew attention to fatigue of materials, which sometimes escapes attention. He also mentioned the measures taken to recruit and train all staff, including engine crews, traffic staff, and those entrusted with track, bridge, and rolling stock maintenance, followed up by refresher courses from time to time. The strict observance by all grades to secure safety is constantly stressed at periodical meetings between senior staff and all subordinate grades, and also in the weekly circulars issued by railway headquarters.

With the increase in road traffic, the manning of additional level crossings is constantly under review. The speaker ended with a plea to the public to co-operate in assisting the railways to reduce the incidence of accidents of all kinds.

Freedom of the Line

THE "rail rover" tickets issued by the London Midland Region from last Monday are something entirely new in railway travel facilities. For £9 a passenger can purchase a ticket which will take him anywhere he likes in the Region, and by any train, for one week. He has the freedom of some 4,000 route-miles of line stretching from London to Carlisle and embracing the holiday resorts of North Wales, the Lake District, and the Peak. With a little careful planning, some magnificent rail tours could be arranged at bargain rates, or a series of excursions from a chosen central point. As a family facility, the new ticket is even more attractive, for a man and wife travelling together pay only £8 each and a child travelling with his parents pays £4 instead of £4 10s. The rail rover ticket is, in effect, an extension of the popular holiday runabout ticket to a much wider area and the response to the offer will be worth noting. In Regions which include seaside resorts nearer London, such a ticket should be even better received by the public.

Electrification Progress in New South Wales

ELECTRIFICATION at 1,500 V. d.c. of the New South Wales Government Railways main line between Parramatta, near Sydney, and Lithgow, in the Blue Mountains, 83 miles, was inaugurated by the Premier of New South Wales, Mr. J. J. Cahill, on June 22. Alternative methods of increasing line capacity had been considered, such as increasing the number of tracks, and re-alignment to ease curves and gradients. The contract for supply and installation of the overhead equipment was awarded to British Insulated Callender's Construction Co. Ltd., London, with work carried out in three stages, the first two of which, from Parramatta to Blacktown and from Blacktown to Penrith, were opened in February and September, 1955, respectively. The installation on stages 1 and 2 is of the simple catenary type; for stage 3 (Penrith to Lithgow) compound catenary construction was used because of the heavy currents demanded. In the Blue Mountains the line attains an altitude of 3,500 ft., with gradients of 1 in 33 and curves of 8 ch. radius. The equipment is supported mainly from portal structures fabricated in England from broad flange beams. Electrification has resulted in considerable accelerations of passenger and freight trains and doubling of the traffic capacity of an important link between the agricultural and mining areas of the Blue Mountains, and the eastern seaboard, besides improving the Sydney suburban service.

A Moment's Forgetfulness

COLONEL W. P. REED'S report, summarised in this issue, on the collision on August 10, 1956, at Yarmouth Vauxhall, shows it to have been due to one of those momentary mistakes which seem so unaccountable afterwards to the person making them, in this case a most experienced relief signalman with an excellent record and noted for his care in carrying out the regulations. He cleared a signal giving admission to a line which he knew to be occupied. There were no track circuits in the station but it is understood that some are to be provided. The three pre-grouping companies operating in the south of England usually protected stations of this type by electrical fouling bars which, while not giving 100 per cent protection for isolated vehicles, if care was not taken when detaching them, did prevent a movement being made into a platform line occupied in the way this one was, a condition which applied, it is of interest to recall, in the case of the very similar but fatal accident at Scarborough in 1943, which took place curiously enough also on August 10.

Railway Finance in Parliament

IT is understandable that Members on both sides of the House of Commons are demanding a debate on the British Transport Commission report and accounts for 1956 before the summer recess. They have a number of questions to raise. Parliament, which votes the money to meet the deficits and has the responsibility of holding the Commission to account for them, needs to be reassured that everything possible is being done to keep the losses to a minimum. A deficit of some £50 million was expected on the year's workings, but it has come as a shock to some Members to learn that for the first time since the amalgamations under the 1921 Act became effective the railways as a whole have sustained a working loss. Not even during 1926, the year of the general strike, was this the case; previously there has always been some net revenue, even though heavy losses resulted after payment of debenture interest. There is an impression that the Commission is no longer handicapped by its total capital being represented by fixed-interest-bearing stock, and by being unable to meet fluctuating revenues by withholding dividend payments to equity holders as did the former railway companies. This is true, however, only as regards a limited period, for the Commission is under the statutory obligation to pay Government loans with interest. Only profitable operation of certain of its other activities saved the Commission from an overall loss. There is for instance the remarkable achievement of British Road Services, which, despite a declining fleet, increased competition, and, in the last months of the year, motor fuel restrictions, ended up with net receipts of £1·8 million. The Opposition will probably draw attention to the results of Ministerial interference in the Spring of 1956, which prevented the Commission from obtaining the total increases in charges which were known to be essential if the deficit were not to assume alarming proportions and also caused it to fall in with Government policy of holding prices down.

It is not so much with the past that Parliament should be concerned but with the future. It is important to show that the railways will be so administered that the hopes for the future put forward in the White Paper, and recently repeated with confidence by the Commission, can reasonably be expected to be fulfilled. This is necessary because there are some Members of Parliament who have repeatedly questioned the wisdom of Government-supported heavy capital expenditure on the railways at a time of declining traffics. Their misgivings admittedly may be partly due in some instances to an inherent dislike of nationalisation, but some are also believed to consider Parliamentary control over the monies voted to be inadequate.

In this connection the Select Committee on Nationalised Industries may have something to say. It would seem that the British Transport Commission report and accounts for 1956 provide it with its first opportunity to demonstrate whether a committee of this kind can be effective in exercising control over the public corporations. Any investigation into the financial affairs of the Commission which the Select Committee decides to undertake must take time and meanwhile there is a demand for a Parliamentary debate. The accounts for 1955 were not debated, and it would be regrettable if discussion on those highly important figures, already six months out of date, were held over until the late autumn. The outlook for the railways is by no means black and the management is fully conscious of the tremendous task that confronts it if the railways are to achieve financial equilibrium by the early 1960s. In fairness to the Commission, and to enable Parliament to carry out its responsibility as the guardian of the national interest, the Government should find time for a debate on the nationalised industries before the end of the month. The summary announcement of raised freight charges, made only a few days after the issue of the annual report for 1956 and on the very day that the new freight charges scheme came into force, will arouse criticism but must not result in Parliamentary or Ministerial interference which would prevent the Commission from raising its charges when events necessitate this.

Modern Railway Travel Exhibition

"THE first fruits of modernisation" were the words used by the Minister of Transport & Civil Aviation, Mr. Harold Watkinson, to describe the Modern Railway Travel Exhibition which he opened last Friday at Battersea. The exhibition, open to the public from the afternoon of June 28 to the evening of June 30, was arranged by the British Transport Commission to show the kind of new passenger equipment and amenities, including not only rolling stock, but a station waiting room, a station lounge buffet, a ticket office with automatic ticket issue machinery, and baggage handling equipment, now in use or shortly to be introduced throughout the country. Also on view were diesel units, including a 1,000-h.p. mixed-traffic main-line locomotive, of the type now being delivered to British Railways, in implementation of the policy of replacing steam haulage. The display attracted some 15,000 members of the general public. Its importance was shown by the presence at the opening ceremony not only of Sir Brian Robertson, Chairman, and members of the British Transport Commission, members of Area Boards, and many senior officers of British Railways, London Transport, and associated undertakings, but also many Members of Parliament, representatives of British industry, and persons prominent in the world of transport such as principals of firms manufacturing railway material, and representatives, mainly technical, of railways in the British Commonwealth and of British-owned railways in other countries; these latter naturally were much interested to see what, of so much equipment used by British Railways, could be applied on their own systems.

Mr. Watkinson's remark that the financial support which the Government was giving British Railways through the modernisation programme was an expression of its faith in the "new organisational set-up" and also in the new spirit of enterprise and co-operation between management and men, will encourage many senior railway officers responsible for implementing the several reorganisational schemes in the Regions. Another purpose of the exhibition, the Minister added, was to encourage a greater use of the railway system by both passengers and freight.

The exhibition comprised over 30 main exhibits and, as anticipated in last week's issue, included three types of diesel locomotives, the English Electric 3,300-h.p. Co-Co Deltic, a 1,000-h.p. English Electric-Vulcan Type "A" mixed-traffic, and a 350-h.p. shunting locomotive of standard British Railways design. The thirteen prototype passenger coaches were examples of construction at British Railways works besides products of private builders. These latter were first and second class vehicles constructed by Cravens Limited, the Birmingham Railway Carriage & Wagon Co. Ltd., the Metropolitan-Cammell Carriage & Wagon Co. Ltd., and the Gloucester Railway Carriage & Wagon Co. Ltd.; their products exhibited incorporate the builders' own conceptions of means to make railway travel more comfortable and attractive. Some of these features, such as revolving and reclining seats, window venetian blinds, and air conditioning have aroused much interest. The six exhibits of stock built in the railway works form a group of prototypes embodying improvements developed by British Transport Commission committees and British Railways designers and design consultants. In all these vehicles, seats are of a new and improved design, the sliding windows are larger than those now in use, and the standard of electric lighting is higher. The Metropolitan-Cammell coaches have been described in this journal, and those products of private builders and of British Railways works not hitherto described will form the subject of articles in forthcoming issues.

Application of the diesel-powered multiple-unit type of formation in this country was exemplified by three exhibits which showed representative coaches of the inter-city diesel trains which operate between Edinburgh and Glasgow and between Birmingham and Swansea, of the Southern Region six-car Hastings main-line diesel-electric trains, and of the Wickham-built multiple-unit diesel-mechanical railcars which incorporate integral body construction and other innovations and which are described in greater detail on another page.

The importance which British Railways attach to modern catering methods designed to provide somewhat lighter and cheaper meals than are available in a normal dining car, may be seen by the two prototype catering vehicles, a kitchen-buffet car and a restaurant-buffet car, built in British Railways works, and in regular service since August, 1956. Improvements in the standard of second class sleeping-car accommodation were shown in the example of the latest type of this form of rolling stock, which incorporates two-berth compartments and a high degree of sound proofing.

Sir Brian Robertson, introducing the Minister of Transport, commented on the difficulty of finding a suitable site for the exhibition which prevented it from being more ambitious. The idea of the exhibition is certainly commendable, and praise is due to the organisers for selecting such excellent examples of British design and workmanship. Surely, however, the not inconsiderable time and money which had been spent on arranging the exhibits merited a longer view than the mere two-and-a-half days the exhibition was open. We should also like to see this exhibition, or part of it, shown at various provincial centres for, say, a week or fortnight. Bearing in mind that travellers to and from London termini and the main stations in the largest provincial cities tend to be in a hurry when travelling to and from their work, we advocate exhibitions in provincial centres which combine pleasant surroundings—with a conveniently located siding if possible—and good travel facilities. Towns such as Gloucester, Harrogate, Norwich, and Salisbury come to mind. In this way the greatest possible number of people could see, at leisure, what British Railways are doing for the public they serve.

Passenger Train Punctuality

THE second of a series of articles entitled "Keeping Trains to Time" is published in the April, 1957, issue of *British Transport Review*. This article, by Mr. G. F. Fiennes, Traffic Manager (Great Northern), Eastern Region, British Railways, deals with passenger services, freight services having been considered in the December, 1956, issue by Mr. L. W. Ibbotson, Assistant to Chief Operating Superintendent, Western Region. Mr. Ibbotson's article was discussed in our issue of February 1.

Mr. Fiennes regards the components of a good passenger service as safety, speed, frequency, punctuality, comfort, and cheapness, though not necessarily in that order. Punctuality is important from the point of view of the passenger, to whom, as he rightly points out, the timetable should be a promise and not a hope. The running of an intricate service to time is also in the interest of the morale of the staff. Once the spirit of punctuality is abroad everyone concerned with the running of trains makes great efforts to perform his own tasks to time. Furthermore, the general briskness often produces better work, and carriage cleaning, maintenance of stock, appearance of stations—and the standard of courtesy—all improve, as Mr. Fiennes recognises. A service run as planned, provided that the planning is well done, is also the cheapest service, as improvisation when trains get out of turn must inevitably result in additional expense.

A hidden, but none the less real, expense is the recovery time allowed in anticipation of unpunctuality. At the terminals there is always a time interval longer than is strictly necessary before return journeys of stock, locomotives, and crew, are rostered to commence. The extra time may be very limited—at one London terminal with electric services it amounts to only 1 min., but this is a service which has a punctuality record of 85-95 per cent of arrivals on time. If the recovery time were increased by only 2 min. it would be necessary to use three more trains at a cost of more than £50,000 a year. Most passenger services, of course, have a greater recovery margin than this, possibly of as much as 1 hr., and freight services have even greater margins. The total

cost of such costly provisions against unpunctuality must be measured in terms of millions of pounds a year.

The known factors in the planning of services are the capacity of the line, the tonnage of the trains, the performance of locomotives, and time needed at stations. A further factor which could be known, but is not, is the precise location and severity of the temporary speed restrictions required by engineering work on the track. The final factor, the weather, must remain an unknown quantity. Despite the known factors, the capacity of the track is often exceeded in planning, engines are overloaded, and stations are asked to deal with trains in impossibly short times. These things happen because of pressure from the public for more trains, the urge from outside interests to treat the fastest runs by the best drivers as the normal standard of performance, and the tendency to put on more relief trains than a station can handle. The engineering restrictions are growing in importance as work on the modernisation plan proceeds. On one line, recently, there were nine restrictions in 20 miles. On one 160-mile main line, even before electrification work has started, the time value of restrictions has increased from 6 min. in 1938 to 19 min. in 1957.

The timing of trains over such sections allows recovery margins to conmpensate for these restrictions. Sometimes it is a simple question of allowing a long enough overall time to enable the locomotive crew to overcome restrictions by getting time in hand before them and making up time afterwards, and in others specific recovery times between particular points are shown in the working timetable. The times allowed are by no means sufficient to cover the full amount of time lost by restrictions. These apparently arbitrary allowances are needed because the engineers cannot forecast their work for a long enough period to enable proper provision to be made in the timetables. Drivers of long-distance trains can average out their delays and by judicious running get their trains in to time, but the effects at intermediate stations can be serious. To use Mr. Fiennes's example, if the engineers have two restrictions north and two restrictions south of Peterborough in one week, and the next week none north and four south, the train will pass Peterborough on time in one week and may be 8 min. early in the second, with consequent effects on preceding services from that station. If the train is booked to stop at Peterborough the effect is even worse, as the driver must not leave Peterborough before time but must face four restrictions in the second week with an allowance for two only. The only answer to these problems is to plan engineering work ahead with much more precision than at present, but obviously this is a process which can be carried only so far.

The weather must remain an unpredictable factor, but it is worth noting that electric services on lines with modern signalling are little affected by weather. It will be interesting to see whether multiple-unit diesel services will show similar characteristics on routes with colour-light signalling.

An analysis of passenger train delays given by Mr. Fiennes is illuminating. He shows permanent-way restrictions to be responsible for 25 per cent of delays and locomotive delays to be responsible for another quarter. Signals account for 15 per cent of delays, although more than two-thirds of signal delays are reactions from one of the two prime causes. Signal and track-circuit failures account for 10 per cent of delays, station duties for 4 per cent, coaching stock defects for 8 per cent, and miscellaneous causes, such as special stops, open doors, head and tail lamps extinguished, and so on, for 13 per cent. A great number of delays is caused by the human element, and many others are caused by departments with no immediate interest in train running or punctuality. Locomotive delays, for example, may sometimes be traced back to the coal supplies officer for failure to produce the right fuel, or to shed staff for putting the right coal in the wrong tender.

Apart from the general inculcation of the right attitude of mind to punctuality in all railway departments, Mr. Fiennes considers some form of bonus for punctuality, as paid in France, to be the inevitable answer. This has certainly produced results in France, though it is not the only reason for the punctuality of French trains, but the introduction of such a scheme in this country would be fraught with difficulty. The driver seeking a bonus may be frustrated by the poor condition of his locomotive, which may be due for shops, while another driver, striving no harder to regain lost time, may have an engine in first-class condition. Nevertheless, the problem has been solved in France, and, with common sense all round, could be solved in Great Britain.

A Wider Outlook Needed in Signalling

WHILE the advantages to be obtained in more economical traffic working with better use of locomotives, rolling stock, track, and manpower, have been appreciated for a long time past and prompted the adoption of most of the power and automatic signalling brought into use in the present century, the question has been becoming increasingly urgent since the last war in the light of the considerable rise in the cost of practically everything and resultant serious reactions for all forms of transport. That the acknowledged high level of safety obtaining on the railways must be maintained, and even if possible improved, goes without saying. At the same time the traffic, growing on some sections of route, must be handled with the maximum of expedition and regularity of flow and at the lowest possible outlay.

Old-established methods, which admittedly have served the railways well over a long period, and even some of those generally followed hitherto in power and automatic signalling, now are having to give way to wider conceptions of operating practice and to types of apparatus based on the latest developments in scientific knowledge and up-to-date manufacturing processes. The ultimate aim is economic, to obtain the most efficient results at lowest first cost and maintenance charges combined with reasonable working life for the equipment. Such was the main theme of the inaugural address delivered on April 10 before the Institution of Railway Signal Engineers by the new President, Mr. A. W. Woodbridge, Signal Engineer of the Western Region, in which he sought to take stock of the position and to outline the course along which, in his opinion, signal engineering should now be developed.

Most of the conditions to which his remarks, which of set purpose challenged not a few prevailing views and practices, made reference, have arisen from the circumstance that signal engineers, whether on the railway or in industry, had to work originally within certain limitations tending to confine their endeavours to particular paths. Seldom were they in a position to use, or be asked to supply, equipment in quantities at all comparable to those known in some industries. They had to proceed with circumspection when introducing new methods, with the responsibility for safe working resting on their shoulders. Whether they went unnecessarily far in this direction when drawing up their specifications, at least for some items of equipment, may be open to debate, but with the experience then available it was better and more prudent to do that than not to go far enough. To some extent they were impelled by the knowledge that in the days when power signalling began to find favour some of the work done left something to be desired; failures were relatively frequent and not always on the safety side.

Gradually the position improved, but the lessons learned engendered a cautious spirit, the effects of which were long lasting. Today no doubt, under different circumstances, it should prove possible, given full co-operation between the railway authorities and industry, to move with success along the lines Mr. Woodbridge indicated. This will, we think, be generally admitted although opinions may differ on how to do so to the greatest advantage. The Institution has set up a committee to investigate the possibilities of what has come to be called

miniaturisation, very closely connected with the problem, a course which may be expected to exercise considerable influence on more than one aspect of it.

The address mentioned a particularly interesting subject, to which the new President is known to have paid special attention, the application of work study methods, not merely to the manufacture and repair of signalling equipment but its day-to-day maintenance, with which he has achieved notable results, effecting appreciable savings and utilising manpower, often so difficult to come by today in satisfactory quality, to considerably greater advantage, an achievement which appears to offer great general possibilities. In this, as in other departments of railway engineering and operation, it is imperative to explore every avenue affording a chance of improving general efficiency and to do so in the spirit of that wider outlook for which Mr. Woodbridge so earnestly appealed.

British Transport Commission Traffic Receipts

THE traffic receipts of the British Transport Commission for Period 6, the four weeks ended June 16, might be expected to reflect the incidence of the Whitsuntide holidays and some of the best weather for years. Passenger receipts for British Railways, at £11,535,000, showed an advance of £1,520,000 on receipts for the previous year. The increase compared with Period 5, only £693,000 in 1956, was £1,722,000 this year, but the effects of petrol rationing during part of Period 5 this year must be borne in mind. London Transport railways must be expected to settle down to a lower level after petrol rationing, but held their own in the period under review in comparison with the previous year. London Transport road services receipts, which did well in the earlier periods of the year but fell away in Period 5, advanced again to £4,661,000, an improvement of £299,000 on the corresponding period of last year. Provincial and Scottish bus receipts were disappointing, although at £4,813,000 they were £182,000 more than in Period 6 of 1956, and passenger shipping receipts also were less than might have been expected. A comparison of the aggregate figures, however, shows that at the end of Period 6 this year passenger receipts of the Commission were £126,361,000, an advance of £13,746,000 on receipts at the same date in 1956, a trend which should become more marked when implementation of the modernisation plan results in improved services.

—	Four weeks to June 16		Incr. or decr.	Aggregate for 24 weeks		Incr. of decr.
	1957	1956		1957	1956	
	£000	£000	£000	£000	£000	£000
Passengers—						
British Railways ..	11,535	10,015	+ 1,520	59,467	51,648	+ 7,819
London Transport:						
Railways	1,697	1,643	+ 54	10,779	10,036	+ 743
Road services ..	4,661	4,362	+ 299	27,720	25,218	+ 2,502
Provincial & Scottish buses	4,813	4,631	+ 182	26,388	23,839	+ 2,549
Ships	604	539	+ 65	2,007	1,874	+ 133
Total Passengers ..	23,310	21,190	+ 2,120	126,361	112,615	+ 13,746
Freight, Parcels & Mails—						
British Railways:						
Merchandise & livestock	7,900	7,871	+ 29	52,324	48,441	+ 3,883
Minerals ..	3,840	3,931	− 91	25,153	24,174	+ 979
Coal & coke ..	9,246	9,941	− 695	60,047	59,756	+ 291
Parcels, etc. by passenger train	3,753	3,696	+ 57	22,612	21,116	+ 1,496
Collection and delivery, etc. ..	1,025	987	+ 38	6,369	5,866	+ 503
Total freight, British Railways	25,764	26,426	− 662	166,505	159,353	+ 7,152
Others*	4,262	4,331	− 69	25,177	25,805	− 628
Total Freight, Parcels and mails	30,026	30,757	− 731	191,682	185,158	+ 6,524
Total	53,336	51,947	+ 1,389	318,043	297,773	+ 20,270

* Inland waterways freight, road haulage, and ships

British Railways receipts for merchandise and livestock traffic, though less than in the previous period, were £29,000 more than in 1956. This is a welcome reverse of the position in Period 5, when receipts were £252,000 less than in the previous year, but is by no means encouraging, even when allowance is made for the general falling trend of traffic against which this result should be examined. This is, however, the last complete period before the introduction of the maximum charges scheme, and future results may show, gradually, quite a new trend. Even allowing for the Whitsuntide holidays, mineral and coal and coke receipts are less than they should be. The effect of the mild winter and the shipbuilding and engineering disputes must be considered at least partly to blame for the small aggregate advances of coal and mineral traffic receipts compared with last year. Parcels receipts and collection and delivery results must be considered satisfactory in all the circumstances, and those for the combined receipts of inland waterways freight, road haulage, and ships still reflect the disposals of road haulage vehicles in 1956.

PERCENTAGE VARIATION 1957 COMPARED WITH 1956

	Four weeks to June 16	24 weeks to June 16
British Railways—		
Passengers	+15·1	+15·1
Parcels	+ 1·5	+ 7·0
Merchandise & livestock	+ 0·3	+ 8·0
Minerals	− 2·3	+ 4·0
Coal & coke	− 6·9	+ 0·4
C. & D. services	+ 3·8	+ 8·5
Total	+ 2·3	+ 6·6
Ships (passengers)	+12·0	+ 7·0
British Road Services, Inland Waterways and Ships (cargo)	− 1·5	− 2·4
Road Passenger Transport, Provincial & Scottish ..	+ 3·9	+10·6
London Transport—		
Railways	+ 3·2	+ 7·4
Road services	+ 6·8	+ 9·9
Total	+ 5·8	+ 9·2
Aggregate	+ 2·6	+ 6·8

Letters to the Editor

(*The Editor is not responsible for opinions of correspondents*)

Motive Power Policy

July 1

SIR,—May I assure Mr. J. M. Kay, reference his letter published in your June 21 issue, that the British Transport Commission fully recognises the value of railway electrification. Indeed, it is the intention, under the railway modernisation plan, ultimately to electrify all railway lines in Britain where economic justification can be found. The rate at which electrification may be carried out, however, is severely limited by the substantial engineering work, with consequent heavy demands on industry, that is involved on tracks, structures, signalling, and telecommunications. On the other hand, the changeover from steam to diesel traction, which offers many of the advantages of electricity, generally does not involve important civil engineering or signalling works, and can be effected much more readily.

The plan thus does not seek to choose between the two forms of traction, but rather to combine them to the best advantage. Moreover, it contains a specific proviso (paragraph 38) that "if it should be subsequently decided that it is practicable to electrify a section upon which diesel traction has already been introduced, the diesel units would be used elsewhere."

Yours faithfully,

I. H. BREBNER
Public Relations Adviser

British Transport Commission,
222, Marylebone Road, N.W.1

THE SCRAP HEAP

First Hampstead Tube Ticketholder

(*See the Scrap Heap of June* 21)

Holder of the first ticket issued (free) at Hampstead Tube Station when it was opened on June 22, 1907, Mr. D. J. Service, a retired civil servant, aged 67, travelled from his home at Clacton-on-Sea to Hampstead last Saturday to take part in the station's golden jubilee celebration.—*From "The Times."*

Dinner for One

Travelling by train in Italy at 10 p.m. I was served with a full, hot four-course dinner. I was the only person there. The waiters were charming. Would this ever happen in England? —*From a letter to the "Evening Standard."*

[The necessity to serve dinner at a late sitting to only one passenger does not seem to indicate very efficient restaurant car management. If, however, such a contingency arose for some reason, on British Railways, we are confident that the dining car staff would prove as courteous and efficient as they so often are.—ED., *R.G.*]

Men and Trains

The train runs through man's life: it does not show us boundless oceans and vast deserts as a ship does; it does not waft one across a superb, untouched and silent sky as a plane does. The train is in direct contact with man, invented by man and for man, and it never loses sight of man, whether at the stops in silent wayside stations where every evening there is nearly always a soldier with his haversack going to rejoin his unit, or in the main station of some city or other where a heterogeneous mass of surging humanity prepare to travel for an infinite variety of reasons.—*Gianni Barrella in the "Italy Tourist Review."*

Paris Métro Model for London Show

The model of the Paris Métro presented to the Queen for the Duke of Cornwall during the Royal visit to Paris, as recorded in our April 19 issue, will be on show at the "Model Engineer" Exhibition at the New Horticultural Hall, Westminster, on August 21-31.

The model consists of two cars, one first and one second class, made of cast bronze. These are internally lit and equipped with seats, headlights, rear-lights, and the coat of arms of the City of Paris. It is powered by a strong motor. The train runs on eight metres of double track, with a live side rail, and calls at two stations, Hotel de Ville and Georges V. When it arrives at stations the doors open and close automatically. The stations include scale model fire-fighting equipment, wooden forms for passengers, stationmaster's office, Métro maps, notices, posters, and even a chocolate vending and a weighing machine (illuminated), also a basket for used tickets. To produce the authentic earthenware tiles a plastic mould had to be specially made. The model took 350 man-hours to plan and build and was made by Trains Miniature, of Paris.

"Caledonian" Restaurant Car Menu Card

(*See our June* 21 *issue*)

The arms of Glasgow (above) and London shown in varying tones of blue and in black on the menu card cover in the "Caledonian" (Euston-Glasgow Central)

Bare-Faced Business

(*See our June 21 issue*)

If, in due course, they introduce
Self-shaves at railway stations,
We may expect, without a doubt,
Tonsorial remonstrations;
But it may solve the quandary,
Recurrent every morn,
Whether to catch a later train
Or go to work unshorn.
Self-shavers need not undergo
The torment of the chair
From those adepts who operate
Tonsorially there;
Or dread each moment that they may,
In spell-bound aberration,
Expose the limitations of
Their sporting education.
Nor need the tardy traveller
Take with him to the grave
The facial mementoes of
Too many a narrow shave.
He won't get so exited, when
He hears an engine whistle;
He'll plug in at the station and
Eradicate the bristle.

Please note: you need not bother
With shaving kit or jug,
The only thing essential is:
You *must* bring your own mug !

A. B.

Eastern Region Pre-electrification Work

Brick arch of Simmons Lane bridge, Chingford, being demolished. This is one of the bridges being raised to give extra clearance for electrification on the Liverpool Street-Chingford line

OVERSEAS RAILWAY AFFAIRS

(From our correspondents)

INDIA

Proposed Underground for Bombay

The Bombay Municipal Corporation has sanctioned expenditure for a survey for an underground railway. A line some 20 miles in length is understood to be contemplated.

Engineering Training at Manmad

A temporary training school for staff of the Engineering Department was recently opened at Manmad, Central Railway. The school building, office accommodation, and hostel provide initial facilities for training apprentice permanent way inspectors, promotion training for mates, and refresher training for mates and permanent way inspectors. The school will take approximately 75 trainees at a time and the number programmed to be trained in the year 1957-58 amounts, in all, to 457 staff. The training not only serves to provide the trained men required for the developmental activities of the Central Railway under the Second Five-Year Plan but is also aimed at increasing efficiency. The Superintendent of the Railway Training School, Bina, Central Railway, is in charge of the running of the school at Manmad.

NEW ZEALAND

New Booking Office at Wellington

A new suburban booking office, equipped with ticket-printing and issuing machines for rapid service, was brought into use recently in the concourse of Wellington Station. Located close to the Featherston Street entrance, through which the majority of suburban passengers pass, and directly opposite the principal suburban departure platforms, the new booking office is more convenient for suburban passengers than the previous arrangements. The booking office in the main booking hall is now used solely for bookings to stations beyond the suburban area.

WESTERN AUSTRALIA

Closure of Lines

On December 19, 1956, a motion was agreed by the State Parliament to the closure of 842 miles of railway. The closure motion followed a report by an interdepartmental committee appointed by the Government to investigate the economics of non-paying branch lines in country areas. The committee recommended the closure of certain lines, in stages, and the 842 miles now approved for closure represents the first stage. Rail services will continue to operate until such time as suitable alternative road transport has been provided, and bills for permanent discontinuance and pulling up of the lines in question will not be introduced in Parliament until experience shows that the alternative services satisfactorily meet requirements. A requirement of the motion is that wherever practicable the alternative road transport should feed into the nearest railway terminus so that the available traffic will be preserved for railways for the bulk of its journey.

Arrangements for the provision of alternative services are in the hands of the Western Australian Transport Board, and so far the Geraldton-Northampton-Ajana; Wokarina-Yuna; and Dwarda-Narrogin lines have been closed.

UNITED STATES

Second Talgo Train

A second train of the Talgo type has gone into service on an American railway. This is the "John Quincy Adams" of the New York, New Haven & Hartford Railroad, which has entered service between New York and Boston. It consists of five sets of triple-units, each set consisting of a centre four-wheel car with a two-wheel unit pivoted to it on either side, fifteen units in all. Power is provided by two 1,750-h.p. diesel-electric locomotives, one marshalled at each end of the train.

Out of the 3,500 h.p., 2,400 h.p. is available for traction; the remainder drives an alternator providing current for lighting, heating, air-conditioning and all other train requirements. Each individual unit measures 34 ft. 6½ in. long, and a set of three, 109 ft. 5½ in. in length, 31½ tons, or 700 lb. per passenger seat. Each set of three seats 96 passengers, four abreast in an overall width of 10 ft. 2 in. The two locomotives weigh 96½ tons apiece, so that the weight of the entire train, power included, is no more than 350 tons. Maximum speeds up to 115 m.p.h. are possible, and a speed of 80 m.p.h. can be attained on the level in just under 4½ min. from a dead start.

The first American Talgo train, the Chicago-Peoria "Jet Rocket" of the Chicago, Rock Island & Pacific Railroad, which entered service in February, 1956, is, however, to be transferred on August 1 to suburban service between Chicago, Joliet and Blue Island.

FRANCE

Railcar on Nice-Digne Line

During 1956, the Chemins de fer de Provence put into service on the Nice-Digne line a Renault railcar specially designed for tourist traffic. This vehicle recently underwent an overhaul during which various improvements were incorporated. Mechanical modifications made it possible to remove one driving position, thus improving the passengers' view. In addition, it was re-equipped with reversible seats. Further improvements are to be incorporated in a second railcar of this type on order. The windows will be larger, and the floor is being re-designed to give better soundproofing.

New Presidential Dining Car

A new air-conditioned restaurant car has recently been put into service by the S.N.C.F. in the special train of the President of the Republic. There is one large saloon, 28 ft. 10 in. long, containing a single table capable of seating 14. It is separated by a partition from a smaller saloon containing four ordinary-type tables.

Diminishing Rôle of Steam Traction

At the end of 1956, 40 per cent of the traffic of the S.N.C.F. is stated to have been moved by electric or diesel traction. The corresponding percentages by the end of 1959, 1961, and 1970 are expected to be 60, 80, and 90 respectively.

BULGARIA

Special Fruit Trains

The Bulgarian Republic Railways have acquired 16 double-bogie refrigerator vans and two power-equipment cars from the VEB Waggonbau, of Dessau, in Eastern Germany. All are to be operated as one train taking fresh fruit and vegetables from Bulgaria to Berlin and other Eastern German cities. Each equipment car contains a 90-kW. diesel-generator set to provide refrigerating current and other services down half the train.

EASTERN GERMANY

Double-Deck Passenger Trains

A five-car articulated double-deck passenger train was introduced on the Berlin-Leipzig service during June. Built by the VEB Waggonbau at Görlitz, it is considered as only half a train. Another five-car set is to be completed in the autumn, and will then be coupled to the existing set with a double-deck buffet car between. The present five-car set weighs 129 tons empty, runs on six two-axle bogies, and is suited to a top speed of 75 m.p.h. It contains 640 seats within an overall length of 304 ft. The end cars, 69¾ ft. long, are somewhat longer than the three intermediate cars, which each have a body length of 54½ ft. Bottom floor level is 15 in. above rail level, and top floor level 98 in. The cars are 9 ft. 5 in. wide and 15 ft. 3 in. high. Wheel dia. is 37½ in. and bogie wheelbase 8 ft. 2 in. All cars have superstructures of all-welded steel tubular form and have the Hik form of air-brake equipment.

British Transport Commission Results for 1956

Working surplus of £4·5 million on all activities: British Railways working deficit of £16·5 million: progress with railway modernisation and re-equipment

THE Ninth Annual Report of the British Transport Commission, published last Friday, shows that when all activities of the Commission were brought into account, there was a working surplus for the year of £4·5 million. Against a surplus of £21 million for other activities, there was a working deficit of £16·5 million for British Railways. When the railway share of capital charges, and so on, amounting to £41 million, was added to that deficit, there was a sum of £57·5 million to be transferred to the special statutory suspense account opened under authority of the Transport (Railway Finances) Act, 1957. Other activities bore capital charges of £17·9 million, leaving a surplus of £3·1 million. When this is set against the amount transferred to the suspense account it leaves £54·4 million to be borrowed under the Act in respect of 1956. These results accord with the forecasts in the White Paper issued last October.

There was a drop of £22·1 million in the working surplus compared with 1955, which the report attributes to three main factors: the decline in freight carryings by both road and rail, caused at least in part by the continued growth in the numbers of C-licensed vehicles and the further disposal of B.R.S. vehicles, and the decline in the carryings of London Transport; the freezing of fares and charges in an attempt to assist in combating inflation; and the continuation of inflation, though in a less acute form.

Traffics on British Railways improved towards the end of the year, but this made only a minor contribution to the year's results. London Transport net revenue suffered a reduction despite higher fares; this was the result of a further general downward trend of traffic and a continued rise in costs not countered at once by higher fares. The Tilling and Scottish bus groups were able to adjust fares more quickly and did not suffer so severely. The shipping services also showed a decline in net revenue, and there was a falling off in the more remunerative traffics through the docks. The volume of traffic passing over the inland waterways remained practically unchanged, and the ownership of the canals together with the carrying operations conducted by British Waterways resulted once again in a heavy deficit.

Costs, including wage rates and coal prices, went up during the year, and traffics were adversely affected—on the passenger services by the poor weather of the summer, and on the freight services by the recession in industrial production. The temporary improve-

BRITISH TRANSPORT COMMISSION: CONSOLIDATED BALANCE SHEET AT DECEMBER 31, 1956

December 31, 1955 £		£	£	December 31, 1955 £		£	£
	Current Liabilities				**Current Assets**		
—	Bank advances	12,100,000			Bank balances, Treasury Bills, and cash	15,985,813	
	Creditors and accrued expenses (including £5,585,000 due to a subsidiary company)			42,460,194	Marketable securities (market value £1,015,885)	949 287	
69,734,562		80,808,714		25,617,093	Outstanding traffic accounts	68,839,577	
	Interest (less income tax) accrued on			67,550,623	Other debtors and payments in advance	15,264,975	
12,133,179	capital liabilities	12,477,529		14,844,721	Stores and materials	109,417,329	
81,867,741			105,386,243	93,998,530			
				244,471,161			210,456,981
	Deposits				**Investments in respect of British Transport Stock Redemption Fund Accounts** (market value £25,340,675)		28,323,971
43,119,105	Staff savings banks	42,478,752		24,333,937			
94,750,445	Staff superannuation funds	100,038,381					
137,869,550			142,517,133		**Fixed Assets and Goodwill** on bases indicated in supporting statements and notes on accounts		
	Provisions			10,162,591	Interests in non-controlled undertakings	10,104,410	
109,245,042	Pensions	111,202,020			Interests in subsidiary companies not engaged in the principal activities of the Commission	3,047,548	
18,441,944	Taxation	23,432,520			Rolling stock, vehicles, ships and plant and equipment £953,742,931		
5,677,853	Internal insurance	5,542,853		2,614,351	*Deduct* Depreciation accrued to date 428,713,172		
12,000,000	Contingencies	12,000,000					
145,364,839			152,177,393	901,075,404			
				423,999,783		525,029,759	
	Capital Liabilities						
1,443,620,261	British Transport Stock	1,443,619,442		477,075,621			
	Advances by Minister of Transport & Civil Aviation under the Finance Act, 1956	40,000,000			Land, buildings, permanent way, docks, canals, and other works 1,183,532,974		
—							
705,473	Obligations to Local Authorities	646,988		1,173,755,097	*Deduct* Maintenance Equalisation Account 221,653,541		
1,444,325,734			1,484,266,430	223,776,908			
				949,978,189		961,879,433	
24,554,030	**Capital Redemption Accounts**		28,555,844	31,412,483	Goodwill	41,877,760	
	Net Revenue Account			15,953,012	Road Haulage Disposals Account		
—	Surplus for year 1956 in respect of activities other than British Railways		3,069,982	1,487,196,247			1,541,938,910
				8,228,837	**Discounts less Premiums on issue of British Transport Stock**, less amounts written off		7,722,190
					Special Account established pursuant to Section 3 of the Transport (Railway Finances) Act, 1957		
					Accumulated deficit on Net Revenue Account at December 31, 1955	69,751,712	
					Revenue deficit of British Railways for the year 1956	57,496,624	
					Interest on borrowings during the year 1956 for capital purposes of British Railways	282,637	
							127,530,973
				69,751,712	**Net Revenue Account**—balance (deficit) at December 31, 1955		
1,833,981,894			1,915,973,025	1,833,981,894			1,915,973,025

Note.—Estimated further expenditure on Capital Account authorised at December 31, 1956: £288,000,000.

BRIAN H. ROBERTSON, *Chairman*
J. BENSTEAD, *Deputy Chairman*
REGINALD WILSON, *Member*

CONSOLIDATED WORKING RESULTS OF PRINCIPAL ACTIVITIES OTHER THAN CARRYING

—	Docks, harbours and wharves	Inland waterways: other than carrying operations	Hotels and catering			Letting of land and buildings not in operational use	Grand total
			Hotels	Refreshment rooms	Restaurant cars		
	£	£	£	£	£	£	£
Gross receipts	20,994,193	2,662,293	6,967,237	9,818,831	3,846,016	6,183,209	50,471,779
Working expenses (including depreciation or renewals and after equalisation of maintenance)	18,456,558	2,962,076	6,976,620	9,459,244	4,400,298	2,889,776	45,144,572
Net receipts	2,537,635	*299,783* (deficit)	*9,383* (deficit)	359,587	*554,282* (deficit)	3,293,433	5,327,207
Year 1955							
Gross receipts	20,351,884	2,371,978	6,468,362	9,056,197	3,314,915	5,912,264	47,475,600
Working expenses	17,357,865	2,543,582	6,473,738	8,879,448	3,993,727	2,677,612	41,925,972
Net receipts	2,994,019	*171,604* (deficit)	*5,376* (deficit)	176,749	*678,812* (deficit)	3,234,652	5,549,628

ment towards the end of the year on various services caused by the shortage of fuel for road vehicles showed itself chiefly in the passenger traffics, both road and rail, and in general merchandise traffics on the railways. Apart from the change in the results of British Railways, the only other change of any size was in the net receipts of British Road Services, which were further reduced in 1956 because of disposals, consequent reorganisation, and because of increasing competition from other road operators.

	Net receipts, year 1956 £ million	Better (+) or worse (−) than 1955 £ million
Principal carrying activities:		
British Railways (including C. & D. services) (def.)	*16·5*	−18·3
British Road Services	1·8	− 2·5
Provincial & Scottish buses	5·4	− 0·3
London Transport—		
Road	2·5	− 0·5
Rail	2·0	—
Ships	1·8	− 0·2
Inland waterways (carrying) (def.)	*0·2*	− 0·1
Total: Carrying activities (def.)	*3·2*	−21·9
Other principal activities:		
Docks, harbours & wharves	2·5	− 0·5
Inland waterways (Tolls, etc.) (def.)	*0·3*	− 0·1
Hotels & catering £ million		
Hotels —		
Refreshment rooms 0·4		
Restaurant cars (deficit) *0·6*		
(def.)	*0·2*	+ 0·3
Letting of land and buildings not in operational use	3·3	+ 0·1
Total: Other principal activities	5·3	− 0·2
Miscellaneous activities	2·4	—
Working surplus	£4·5	−£22·1

Passenger Traffic Increases

Despite the bad weather of the summer and the growth of private transport, both passenger journeys and passenger-miles on British Railways increased by 4 per cent on 1955. In particular there was an improvement in traffics in the last four months of the year, when they were substantially higher than in 1955, even before the fuel shortage began. London Transport services were most affected by the adverse conditions, though the steady growth of traffic shown in previous years on the Tilling and Scottish buses came to an end and there was a small decline from the level of 1955.

General merchandise traffic on British Railways again declined, though the reduction was less than would have been expected from the increase in road freight vehicles during the year. Minerals traffic, however, increased in 1956. The slight increase in coal and coke traffic was more than accounted for by the effect of the rail strike on the 1955 figures. Continued diversion of this traffic to road, the report states, must result in the long term in raising the average cost per ton of carrying supplies which continue to go by rail.

Despite the increase of 5 per cent in April, 1956, railway charges for the three main groups of freight traffic were still below or, for coal, only slightly above the prewar level in real terms.

Success of Area Boards

The Commission states that it was greatly satisfied with the progress made by the Area Boards, and during the year more authority was delegated to them in matters of works and equipment and appointments. It became clear, the report states, that the scope of their authority could with advantage be extended still further in the future. The measures of management decentralisation foreshadowed in the Railway Reorganisation Scheme published in 1954 began to be put into effect in the Eastern Region, where Line Traffic Managers were appointed to take over the major part of the headquarters functions of the commercial, operating, and motive power departments.

During 1956, a new drive was made for greater cleanliness of passenger rolling stock and improved punctuality on British Railways. As part of the campaign on timekeeping, inter-Region punctuality competitions were instituted, covering both passenger and freight services; the general standard of punctuality improved slightly during the year. No passenger was killed as a result of a train accident in 1956.

Diesel multiple-unit trains have given a new stimulus to passenger rail travel in suburban and country areas. In 1957 and subsequent years main-line passengers will begin to benefit from inter-urban diesel express trains, and a number of experimental lightweight four-wheel railbuses will be operating on some branch-line and stopping services. In the new railway services of all types the Commission expresses confidence that the public will discover comfort and convenience in contrast to increasing congestion on the roads. In 1956, passenger-miles on British Railways constituted a record for the period since the Commission took over.

As might be expected, pending reconstruction of marshalling yards, fitting of continuous brakes to large

BRITISH RAILWAYS WORKING RESULTS YEAR 1956

Year 1955 £		£
	Gross receipts:	
	Passengers—	
98,358,466	Ordinary	105,823,806
6,776,619	Early morning tickets	6,924,777
13,011,730	Season tickets	14,760,921
118,146,815		127,509,504
	Freight (including parcels and mails)	
	Freight train—	
104,636,806	Merchandise	103,958,237
48,993,754	Minerals (Classes 1 to 6)	52,225,569
119,164,561	Coal & coke	126,415,921
1,428,965	Livestock	1,466,135
274,224,086		284,065,862
	Passenger train—	
30,089,634	Parcels and other merchandise	32,478,057
11,853,687	Mails and parcels post	15,138,010
41,493,321		47,616,067
12,274,585	C. & D., and other road freight services	12,891,666
328,441,992		344,573,595
1,165,391	Letting of sites and premises on properties in operational use (net)	1,207,716
469,168	Commercial advertising (net)	502,691
5,661,767	Miscellaneous	6,291,071
7,296,326		8,001,478
453,885,133	Total	480,084,577
	Working expenses (including depreciation or renewals and after equalisation of maintenance)—	
142,216,248	Train and vehicle operating expenses	157,900,398
94,038,902	Maintenance and depreciation of rolling stock	101,411,665
99,422,446	Other traffic expenses	106,559,136
83,733,704	Maintenance and renewal of way and structures	95,077,515
14,260,862	General	16,714,605
433,672,162		477,663,319
18,415,491	C. & D. services, transhipment by road vehicles and other railway road freight services	18,917,882
452,087,653	Total	496,581,201
1,797,480	Net receipts	16,496,624 (deficit)

CONSOLIDATED WORKING RESULTS OF PRINCIPAL CARRYING ACTIVITIES

	Passenger and freight services of British Railways		C. & D. and other road freight services of British Railways		Road haulage by British Road Services		Road passenger services of provincial and Scottish groups		London Transport services			Ships: passenger and freight services		Inland Waterways: carrying operations		Grand total	
									Road services		Railways						
	£	Per cent	£	Per cent	£	Per cent	£	Per cent	£	Per cent	£	£	Per cent	£	Per cent	£	Per cent
Gross Receipts :																	
Passengers	127,509,504		—		—		57,103,411		55,839,781		22,239,462	6,349,293		—		269,041,451	
Freight (including parcels and mails)	344,573,595		—		47,130,662		—		—		—	8,081,368		998,328		400,783,953	
Miscellaneous (including letting of sites and premises on properties in operational use (net) and commercial advertising (net))	8,001,478		—		1,386,428		594,811		703,058		1,328,510	935,373		24,682		12,974,340	
Total	480,084,577		—		48,517,090		57,698,222		56,542,839		23,567,972	15,366,034		1,023,010		682,799,744	
Percentage of grand total—Year 1956	70		—		7		9		8		4	2		—		100	
Year 1955	69		—		9		9		8		3	2		—		100	
Working expenses (including depreciation or renewals and after equalisation of maintenance):	£	Per cent	£	Per cent	£	Per cent	£	Per cent	£	Per cent	£	£	Per cent	£	Per cent	£	Per cent
(a) Train, vehicle and ship operating expenses	157,900,398	33	11,401,292	60	22,526,858	48	33,240,548	63	32,186,001	60	7,270,595	5,195,182	38	258,539	22	269,979,413	39
(b) Maintenance and depreciation of rolling stock and ships	101,411,665	21	4,139,277	22	9,331,776	20	9,897,357	19	10,048,196	19	3,519,966	2,781,044	21	269,080	22	141,398,361	21
(c) Other traffic expenses	106,559,136	22	1,384,549	7	5,055,138	11	4,690,533	9	6,720,269	12	4,805,593	4,598,794	34	359,055	30	134,173,067	19
(d) Maintenance and renewal of way and structures	95,077,515	20	120,625	1	369,808	1	1,092,288	2	1,071,446	2	4,375,742	786	—	—	—	102,108,210	15
(e) Vehicle licence duties and inland waterways tolls	—	—	656,434	3	1,212,153	2	1,072,932	2	829,662	1	—	—	—	201,112	17	3,972,293	1
(f) General	16,714,605	4	1,427,202	7	8,228,387	18	2,356,725	5	3,150,620	6	1,585,867	1,010,255	7	104,642	9	34,578,303	5
	477,663,319	100	19,129,379	100													
(g) Charges to British Railways for road conveyance of freight	18,917,882		18,917,882														
(h) Other cartage charges to British Railways and other activities	—		211,497														
Total	496,581,201		—		46,724,120	100	52,350,383	100	54,006,194	100	21,537,763	13,586,061	100	1,192,428	100	685,998,150	100
Net Receipts	16,496,624 (deficit)		18,917,882		1,792,970		5,347,839		2,536,645		2,010,209	1,779,973		169,418 (deficit)		3,198,406 (deficit)	
			211,497													211,497	—
Operating ratio: percentage of working expenses to gross receipts	103		—		96		91		96		91	88		117		100	
Year 1955																	
Gross receipts	453,885,133		—		55,765,469		55,051,036		53,832,548		21,819,321	14,347,230		1,024,160		655,724,897	
Working expenses	452,087,653		—		51,471,875		49,343,261		50,831,581		19,850,425	12,333,600		1,123,072		637,041,467	
Net receipts	1,797,480		—		4,293,594		5,707,775		3,000,967		1,968,896	2,013,630		98,912 (deficit)		18,683,430	
Operating ratio: percentage of working expenses to gross receipts	100		—		92		90		94		91	86		110		97	

NOTE.—The classification of working expenses under the main heads shown above, while broadly uniform, differs to some extent for the various principal activities shown

numbers of wagons, and so on, improvements to freight services were, as the report recognises, modest. However, the number of regular fully or partially-braked freight trains was increased to twice the prewar figure. Special attention was paid to encouraging export traffic by rail, and full wagon-load traffic from many centres is now arranged to give arrival at docks the next morning.

The British Railways Productivity Council made progress with the study of the problems and with the practical application of work-study methods and the development of incentive bonus schemes. Up to the end of 1956 some 40 work-study schemes had been implemented throughout British Railways and 60 further schemes were being investigated. During 1956, the Commission set up a Work Study organisation. A Work Study Training Centre has been inaugurated, at the former Staff College at Watford, for the various Divisions of the B.T.C. undertaking.

Recruiting Drive

Although at the end of the year there were still operating difficulties caused by shortage of staff in certain areas, there were signs that the recruiting drive and measures taken to stimulate the interest of young men in a railway career were bearing fruit. There was a net gain of over 7,000 in the numbers employed in 1956, compared with a loss of over 14,000 in 1955. A number of special courses were started in 1956 to give training to staff in the new forms of motive power which are to be widely introduced, with special reference to diesel traction.

In a full year the cost of increases in rates of pay and concessions granted or awarded to the staff during 1956 will amount to nearly £35 million. Early in 1957 settlements were reached on various claims submitted in 1956, and those affecting the staff of British Railways alone will amount to about £15 million in a full year. There was no serious stoppage of work during 1956 in any part of the Commission's undertaking.

Railway Capital Development

Capital development on British Railways was carried out at a faster pace than expected. In particular, electrification work under the modernisation plan should in most cases be finished before 1970, and there should be capacity available for the electrification of other lines in the late 1960s. The Commission is now considering what further projects should be undertaken,

The Commission has decided to provide in future three categories of express train. These will be: Pullman de-luxe expresses with supplementary fares, special inter-city expresses, and ordinary express trains. New rolling stock will be designed and experimental multiple-unit diesel stock has been ordered for the Pullman services.

British Railways spent £9·3 million on additions and improvements to permanent way and structures in 1956. Bridge renewal, the reballasting and re-alignment of tracks, and new signalling works were undertaken to make the main lines usable and safe for electric and diesel traction at higher speeds. Much of the effort in the signal engineering departments has necessarily been devoted to the complete resignalling of lines which are being electrified.

Automatic Train Control

The British Railways design of automatic train control, installed for test purposes on the 105 miles of the down line between Kings Cross and Grantham, was finally approved in November by the Ministry of Transport Inspecting Officers.

At the end of 1956 more than two-and-a-half times as many diesel train-set vehicles were in service as at the end of the previous year. Diesel multiple-unit trains were delivered for the new inter-city services, and the first of these services began running in January, 1957. The first of the six-car diesel-electric units for the London-Hastings service were tested towards the end of the year; the number of vehicles ordered was increased by about half on a reassessment of the business peak traffic.

Progress was made with the planning of the first stage of the electrification of the main line from Euston to Manchester and Liverpool. Preliminary work was also begun on the main-line electrification at 25,000 V. a.c. in East Anglia, and on the electrification at 660V. d.c. of the Southern Region lines to the Kent Coast.

The new electric services from Liverpool Street to Chelmsford and to Southend Victoria came into operation to schedule in June and December. During 1956, £3·7 million was spent on steam locomotive construction and £4·1 million on diesel locomotives. Prototype diesel main-line locomotives, the first of which was delivered in June, 1957, will be operated intensively on the London Midland, Eastern, and Southern Regions to obtain the data on which to base orders for standard types. A total of 156 diesel shunting locomotives were brought into service during the year, and 480 more were on order.

Expenditure on Rolling Stock

Capital expenditure on passenger rolling stock in 1956 totalled £19·4 million. This covered steam and electric stock and diesel multiple-unit vehicles. Some £36 million was spent on freight vehicles and containers.

German Insulated Banana Wagons

Covered vans converted and adapted for special traffic

TO increase the insulated wagon stock and to replace the old, former U.S.A. insulated 8-wheel wagons of TTko type used until now for banana conveyance from Bremerhaven and Hamburg inside Germany, the German Federal Railway has converted 100 " Glmehs 50 " box wagons into special insulated wagons of " Tnomehs 59 " type.

The stock was built recently as ordinary covered vans with light metal sheet roofs and multi-coat wall panels. They have been converted in railway workshops by fitting to the front and side wall posts, on the inside, vertical timber supports 4 in. × 2 in. which are screwed up with the posts, making a supporting frame for the interior cladding of fibre board. The inter-wall space is filled by a 4-in. layer of Styropor insulating material. The ceiling is of flat construction. Insulated hinged doors are mounted behind the sliding outer doors. Adequate ventilation is provided by adjustable air flaps. During the winter the wagons can be heated by special compressed charcoal stoves.

The auxiliary insulation is adequate to maintain the required temperature of about 50° F. The weight of the wagon is increased from 12 tons 6 cwt. to 13 tons 18 cwt. by the conversion. The additional cost is some £500.

Double-floor Vans

It is intended to fit, as a test, a second floor into the wagons as soon as adequate experience is gained with the single-floor stock. Another 200 wagons might be converted if the results of the 100 now in operation prove satisfactory.

The stock, now numbered 328,900 to 328,999 will be renumbered as soon as the long-term hire envisaged to a group of private firms has been arranged. In the near future the stock will be counted as " private " stock, with wagon numbers of the 500,000 series.

The insulation can easily be removed to re-convert the stock into ordinary box wagons, if required.

Particulars of the stock are as follows:

Length over headstocks	41 ft.
Height above rail	13 ft. 4 in.
Floor height above rail	4 ft. 5 in.
Wheelbase	22 ft. 4 in.
Interior length	36 ft. 1 in.
,, width	8 ft. 3 in.
,, height	6 ft. 5¼ in.
,, capacity	18·0 *tonnes*
Axle load	16/18 *tonnes*

MODERNISATION OF BIRMINGHAM CARRIAGE SHED.—Work is starting on a further stage of modernisation of Vauxhall carriage shed, Birmingham, London Midland Region, the roof of which has recently been renewed. The depot services carriages for New Street trains. The scheme will equip the depot to service diesel and electric train stock. The present work, which should be completed within the next 12 months, includes installations of new inspection pits and carriage washing platforms and the replacement of gas by electric lighting. Vacuum brake testing equipment and steam heating points, to pre-heat carriages before they join the trains in winter, are to be installed. The depot is to be equipped for the vacuum cleaning of carriage interiors and the charging and servicing of batteries. Hot and cold water will be also available. Fluorescent lighting will be provided in the inspection pits. Included in the scheme are two new structures, a staff amenities building and a second new brick structure which will house workshops for the carriage examiners, fitters, and electricians, and stores.

EASTERN REGION FIVE-DAY EXCURSION FACILITY.—The Eastern Region is introducing a new five-day excursion facility called the " London (Liverpool St.) Holiday Express," designed to cater for families who, though not going away for a holiday, wish to make a few trips to the seaside and country. The " Holiday Expresses " will run from Liverpool Street from July 29 to August 2 and from August 12 to 16. They comprise a five-day excursion to a different holiday resort each day. The inclusive fares of 75s. for adults and 37s. 6d. for children cover seat reservations; families or parties of friends wishing to travel together are assured of having the same seats on the train throughout the week. The first week's " Holiday Express " will include trips to Clacton, Lowestoft, Wroxham, King's Lynn, and Felixstowe; and for the second week the itinerary will be Wroxham, Walton-on-the-Naze, Yarmouth, King's Lynn, and Folkestone. In each case the Wroxham excursion will include a cruise on the Norfolk Broads and similarly the trips to King's Lynn will be supplemented by a road tour to Sandringham and Hunstanton. Each day the Express will leave Liverpool Street about 10.0 a.m. and return at approximately 9.30 p.m. Refreshment facilities will be available throughout.

WAGONS-LITS COMPANY IN 1956.—The report shows that the number of passengers carried in the sleeping cars of the Cie. Internationale des Wagons-Lits during 1956 was 1,967,000, against 1,872,000 the previous year. The number of meals served in the company's restaurant and buffet cars and in other trains staffed by the company rose from 5,308,000 to 5,458,000, and an increase of 18 per cent was recorded in the sale of drinks and refreshments on trains by *vente ambulante* staff. The company's rolling stock at the end of the year totalled 1,170 vehicles.

Multiple-Unit Diesel Trains for British Railways

300-h.p. sets with bodies of box-girder construction

Power car of the new Wickham multiple-unit diesel trains

THE first of the Wickham multiple-unit diesel train sets, built to the order of the British Transport Commission as part of its modernisation programme, is now about to enter service.

As the power units, transmission, control gear and method of internal heating follow the design already standardised by British Railways, little description of these units is required; the power plant consists of two 150-b.h.p. B.U.T. Leyland six-cylinder horizontal engines with fluid couplings each driving via a cardan shaft fitted with free wheel and an air-operated four-speed Wilson epicyclic gear box; the drive from each gear box to its adjacent bogie is by Hardy Spicer propeller shaft to B.U.T. double-bevel reverse box mounted on the inner axle. The various auxiliary drives to fan, Stone's dynamo and Clayton exhauster also follow the standardised pattern, and the general layout can be followed by reference to the underfloor view on page 15, which also shows the location of the two Smith's heaters.

This and other illustrations are made possible by the use of fully rotating fixtures in which the body frame is initially fabricated by electric welding. Similar fixtures are used in the erection shop for easy fitting of wiring, pipework, engines and transmission, the cars being revolved to the most suitable position for the work in hand.

Use of Aluminium

Other constructional variations from usual in the equipment are the use of aluminium for both fuel and vacuum tanks, which are electrically welded by the argon arc process, and the use of solid drawn aluminium tubing for the vacuum brake pipe layout.

Compressed air control piping is also of solid drawn tube; steel is used in this instance, eliminating to a large degree troubles due to scale loosening and choking control valves. Ermeto couplings are used for connections.

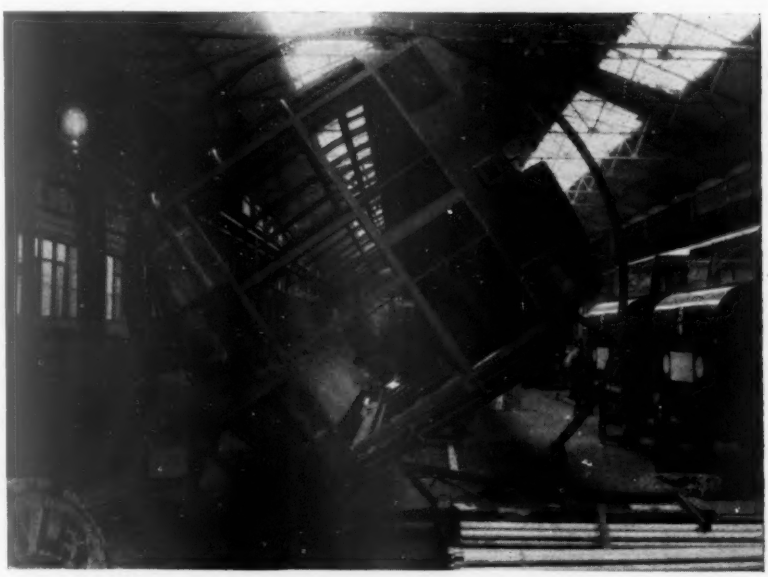
Controls are of standard B.U.T. type arranged with throttle controller on the left and gear change on the right. Tachometers, vacuum and pressure gauges are mounted between on a sloping panel in front of the driver, this panel also carrying the main switch, main switch indicator light and change-over switch for the revolution counter. Indicator lamps are mounted on a vertical panel, on the left and at an angle to the driver so that they can be observed without craning the neck, being at the same time clear of the driver's ahead vision. On the right and within comfortable reach of the driver's hand is the Gresham & Craven vacuum brake valve; the hand brake wheel also is within the driver's reach without leaving his seat.

A comfortably upholstered Chapman driving seat is fitted; this is adjustable for height and can also be moved forward or backwards by the driver when seated.

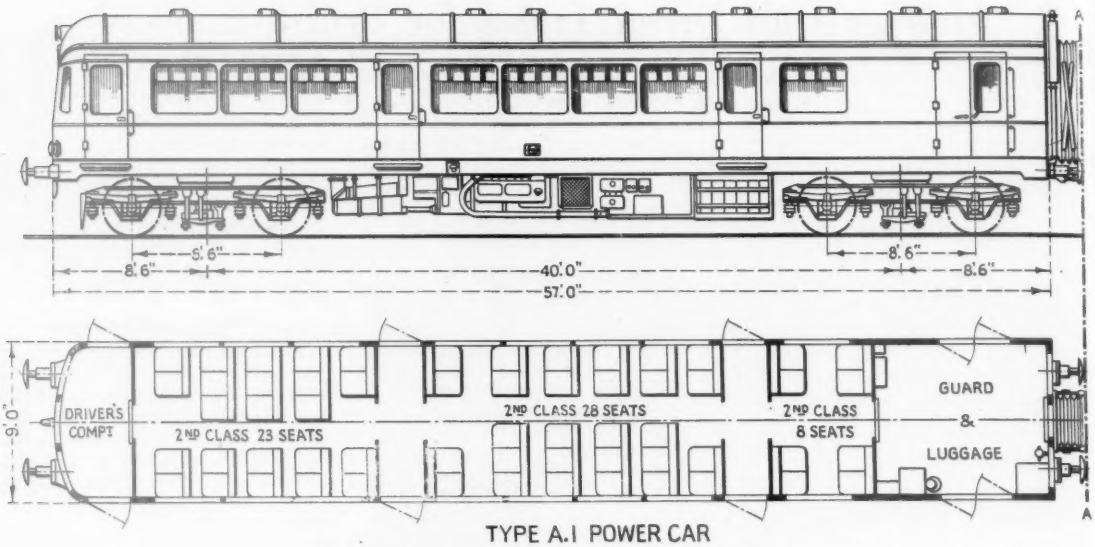
Body Construction

The major variation from standard practice is the body construction. The unit was selected by the British Transport Commission for its recent exhibition of rolling stock at Battersea and to illustrate this the trailer was shown in skeleton form. The construction follows in principle the design first adopted by Wickham in 1936 for use on a South American mountain railway, where weight saving is of vital importance. This body has given no trouble at all and is still in service. Other similar cars are operating in Bolivia, Peru, Colombia, Venezuela, Jamaica, and in East and West Africa. No underframe is used; the all-steel body skeleton forms a tubular stress-bearing box girder designed to take all bending, torsional, buffing and traction loads. The various items of equipment are attached by means of steel brackets welded on as necessary.

The unit of construction of this girder is solid drawn square steel tubing with a wall thickness of approximately $\frac{1}{8}$ in. (10-gauge) and as each tube is, during assembly and welding, completely closed to atmosphere no internal corrosion can occur. The 16-gauge corrugated steel flooring is welded in to the tubular longitudinal and cross frame



Interior sheeting of roof with body frame mounted in rotary manipulator



TYPE A.1 POWER CAR

Layout of second class power car and brake van

members giving additional strength for taking care of buffing loads. The roof stick members are unusual and originated from the fact that railcars for shipment abroad vary in width and contour requirements and to make press tools for every different type is out of the question. The construction used here, of two flat members spaced apart by a zigzag strip and welded as a unit, requires only very simple fixtures for manufacturing purposes and is very light and rigid. In the present case a load of 1½ tons spread over the centre six inches produces a deflection of only $\frac{5}{16}$ in. A further advantage is the ease with which wiring conduit, supply and control services can be run through.

It is this rigid stress-bearing structure that makes possible the use of rotating fixtures not only when welding and panelling but also in fitting the power plant and other necessary services.

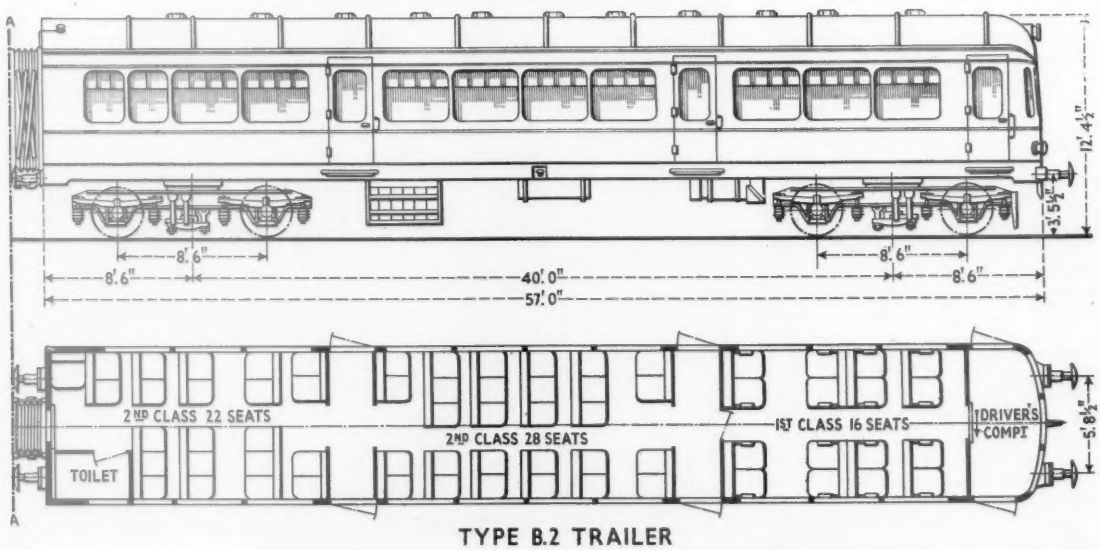
Load Testing

The illustration on page 15 shows the load testing arrangements. These comprise strong-backs distributed over the railcar floor area, spring-loaded bolts being passed through this floor and attached to eyebolts grouted in concrete. Load is applied by hand wheels on each strong-back through calibrated springs, the body skeleton being supported at the bogie centres.

Interior Décor

Both exterior and interior panelling is of 16-gauge aluminium sheet, the inside panelling up to luggage rack level having Warerite bonded to the surface. The roof covering over the luggage racks is corrugated rubber; roof panels are Vynide cloth covered. Both first and second class compartments have the Warerite interior finish, the former simulating walnut and the latter light oak. Very few panel fixing screws are visible, all others being covered at the top by the tubular aluminium luggage racks and at the bottom by the heater duct, special extruded aluminium sections with suitable locating grooves and special section window frames providing neat and rattle-proof retaining fixings.

The Widney windows, apart from the special frames, are of standard British Railways design with polished and anodised aluminium finish. These windows have the standard sliding



TYPE B.2 TRAILER

Layout of composite first and second class trailer car

top lights with deflectors at the top for ventilation purposes, further ventilation being supplied by Airvac roof ventilators, the roof openings being concealed by the longitudinal troughing which also supports the interior lights.

At each entrance door draught deflector partitions are arranged, these being fitted with glass panels and shaped to give a light and spacious appearance.

The corrugated steel floor is filled with sprayed asbestos for sound insulation and then covered with asbestos filled flame-proofed hardboard, the final floor covering being of fire-resistant rubber sheeting. In the power car suitable traps fitted with locks are arranged over vital parts of engine and transmission but all normal servicing can be carried out from the side or over pits.

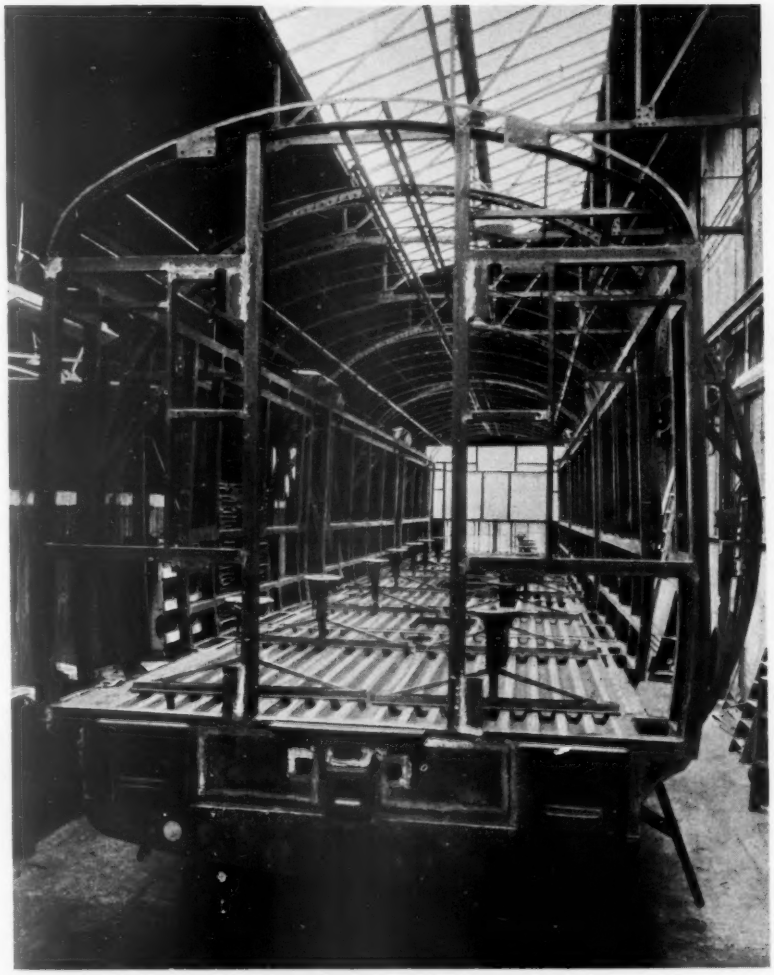
Seating

Steel tubular framed seats by G. D. Peters of Slough are arranged three and two in the second class compartment; upholstery is of patterned green moquette with leather trim on Dunlopillo. The first class seats arranged two and two are of similar type and make, but afford a suitably greater degree of comfort. The finish on these is blue moquette with leather trim.

The guard's compartment in the power car is laid out according to British Railways standards. A seat, electric food warmer, first-aid kit and accident equipment including ladders are provided.

General Layout

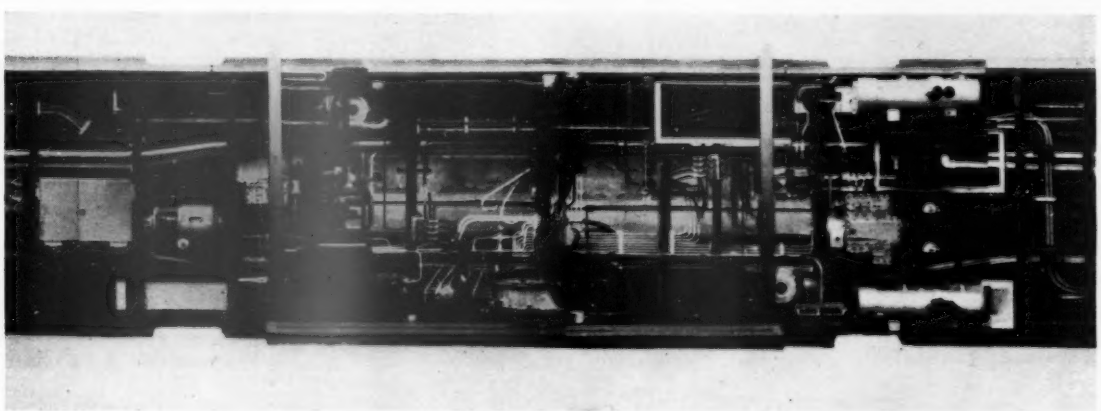
The general layout and overall dimensions in accordance with British Railways requirements are shown in the general arrangement drawing. From this it will be noted that as the car and trailer will be operated as a unit only one lavatory is provided. This is in the trailer, and first class accommodation is also confined to the trailer. Communication between the two cars is by a standard bellows vestibule supplied by A. G. Wild & Co. Ltd. Driving controls are duplicated and fitted to one end of the power car and the opposite end of the trailer car in partitioned-off compartments fitted with lockable sliding doors.



Integral body frame under load test: the spring-loaded bolts are attached to the floor of the workshop

Bogies

Little comment is needed on the bogies, these being of standard Derby design modified in certain details by



Centre section of frame with underside equipment, less engines. The frame is here shown turned on its side in the rotary manipulators

welded assemblies in place of riveted construction and the fitting of Woodhead-Monroe hydraulic shock absorbers between bolster and body. Lighter springing is made possible by the weight-saving achieved with the Wickham method of construction.

Top speed of the unit is the standard 65 m.p.h. at maximum governed engine speed of 1,800 r.p.m.; but, as the tare weight of car and trailer is only just about 47 tons, better acceleration and lower fuel consumption can be confidently expected. Full load trials have still to be completed so full data are not yet available, but on the initial runs the riding and general performance have proved very satisfactory.

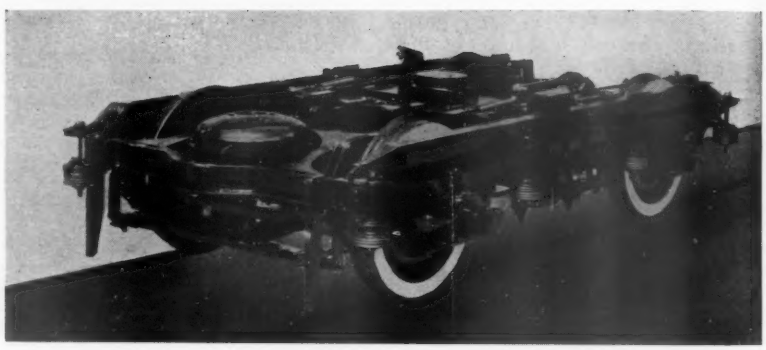
PRINCIPAL SUB-CONTRACTORS

Vacuum brake equipment	Gresham & Craven Limited
Buffers	Oleo Pneumatics Limited
Engines and transmission	British United Traction Limited
Warerite panels for interior	Bakelite Limited
Axleboxes	British Timken Limited

(*Above*) *Interior of power car showing arrangement of second class seating and draught deflecting partitions at entrance doors*

(*Right*) *General view of driving bogie*

(*Below*) *Interior of driver's compartment*



Wheels and axles ..	John Baker & Bessemer Limited
Steel castings	Lake & Elliot Limited
Speed indicator equipment	J. Stone & Co. Ltd.
Flooring material ..	Rubberware Limited
Gangway vestibules ..	A. G. Wild & Co. Ltd.
Flooring section ..	Metal Sections Limited
Windows	Hallam Sleigh & Cheston Limited; Beckett, Laycock & Watkinson Limited
Rubber mouldings ..	Waterford Rubber Manufacturing Company
Springs	Turton Bros. & Matthews Limited; Jonas Woodhead & Sons Ltd.
Aluminium sheets ..	British Aluminium Limited
Aluminium tubes, and sections	British Aluminium Limited; Northern Aluminium Limited
Screw couplings ..	W. & E. Moore Limited
Compression joints ..	British Ermeto Corp. Ltd.
Aluminium pipe fittings	William E. Cotton Limited
Seats	G. D. Peters Limited
Combustion heaters ..	S. Smith & Son Ltd.
Asbestos insulation ..	Sprayed Insulations Limited
Leathercloth	Imperial Chemical Industries Limited
Paints and varnish ..	Docker Brothers Limited; Vulcan Products Limited
Steel tube (square section)	Accles & Pollock Limited
Heater ducting and roof ventilators	Greenwood & Airvac Limited
Panelling rivets ..	Aircraft Materials Limited
Luggage rack brackets	Deans & Son Ltd.
Hinges	Beaton & Sons Ltd.
Shock absorbers ..	Jonas Woodhead & Sons Ltd.
Fire protection equipment	Graviner Manufacturing Co. Ltd.

ELECTRIC RAILWAY TRACTION SECTION

Completing the Nord-Est Triangle

EVEN when allowance is made for the preliminary years of development in the French-occupied zone of Germany and on the French National Railways line from Annecy to La Roche-sur-Foron, the rapidity with which 50-cycle main-line electrification is being extended in France at the present time remains impressive. This year, with the Lille-Basle scheme nearing completion, and an accelerated tempo on the Paris-Lille electrification with a view to its opening at the end of 1958, authority has been given to conversion of the 268·2 miles from Paris Est to Châlons, Nancy, and Sarrebourg. At the last-named point the new scheme will connect with the existing electrification to Strasbourg and beyond, so completing the triangle of electrified main lines to the north and east of Paris referred to in our June 7 issue.

Certain connecting lines are also to be electrified in the interests of re-routing traffic where possible, so as to make maximum use of the new electrification. These include Epernay-Rheims, which will enable Paris-Rheims trains to be diverted from their present route thraugh La Ferté-Milon; and Lérouville-Metz. There will also be an electrified connection from Metz to Frouard on the Paris-Sarrebourg line, but the Lérouville-Metz link gives a journey from Paris to Metz which is shorter by 23·6 miles. Although the new electrified route to Rheims via Epernay will be 10 miles longer than the old one, electric traction will cut the present journey time from Paris by the same number of minutes. A beginning will be made also with the Toul-Dijon project by electrification from Toul to Neufchâteau, forming the first section of an electrified route which will extend eventually from North Lorraine to the Rhône Valley. In the present phase, however, the work will not go beyond Neufchâteau, 26·7 miles south of Toul, and it is being undertaken because the former will be a more convenient point than Toul for the changeover between steam and electric locomotives. On most of the main line to Sarrebourg the speed limit will be raised to 87 m.p.h., from the present maximum of 74·5 m.p.h. or less. Trains from Paris to Strasbourg will be accelerated by up to one hour, and those from Paris to Metz by 40 min.

Locomotive designs proposed for the new electrification are generally similar to those for Paris-Lille, comprising an 80-ton Bo-Bo with a top speed of 87 m.p.h. for passenger service, and two mixed-traffic designs of similar wheel arrangement, weighing respectively 84 and 60 tons, for trains up to 2,000 tons except on certain sections where severe gradients will restrict the loading. The new passenger locomotives will enable the weights of trains to be increased to 800 tons between Paris and Bar-le-Duc, and to 700 or 750 tons beyond on the Strasbourg or Metz routes. Certain high-speed services, however, might be restricted to 600 and 410 tons on the two portions of the route if it were desired to run at speeds up to the permitted maximum. All locomotives will be equipped with rectifiers and d.c. motors. Much study has been devoted to weight reduction since the 50-cycle system was adopted in France, and the 60-ton design mentioned above will no doubt embody recent developments in motor bogie construction and the use of two motors of large capacity instead of one machine for each axle.

It is intended to operate Paris suburban services at first with locomotive-hauled push-pull trains, as motor coach stock could not be available until 1962. It may be recalled that a similar expedient was used in the early days of the Paris-Lyons 1,500-V. d.c. electrification. The quantities of 50-cycle motor coach equipments ordered early this year by the British Transport Commission for the London and Glasgow areas still exceed any similar programme announced elsewhere, and it seems likely that this country will be the first to have such vehicles in operation in large numbers.

Eleven new substations will be required for the Paris-Sarrebourg line, and additional capacity will be provided in the existing substation at Sarrebourg. No fewer than 220 out of some 250 structures affected by the Paris Est electrification will require to be modified in order to obtain the necessary clearance. Civil engineering work is to begin this year, and it is planned to bring the electrification into operation in stages, probably beginning in 1959 with the Paris—Bar-le-Duc section, the whole scheme being scheduled for completion by the end of 1961.

Effects of Temperature on Rectifiers

RECTIFIERS in a.c. locomotives and motor coaches are exposed to much greater variations in ambient temperature than are encountered in a substation. The behaviour of a mercury-arc rectifier when starting in cold conditions, as may occur after a train has been stabled overnight in the open air in winter, has, therefore, become of increased importance. In low temperatures the pressure of mercury vapour inside the rectifier is reduced. Normally the ionisation of the gas neutralises the negative space charge at the cathode and assists the passage of current, but when this effect is lessened by the lower gas concentration, voltage surges may occur on the application of power to the rectifier. Electric heaters are installed to assist cold starting with the air-cooled rectifiers of the motor coaches on the Lancaster-Morecambe-Heysham line of the London Midland Region and where liquid cooling is used quite elaborate measures may be taken to control the temperature of the coolant. In one case immersion heaters are used in conjunction with thermal relays which do not allow the circuit-breakers between the transformer and the rectifiers to be closed until the coolant temperature is above 41°F. Steps are taken to maintain the temperature during working within fairly close limits, an average figure recently quoted being 110°F. For this purpose thermostatic control of a three-way valve regulates the proportion of coolant passing through the radiator. High temperatures, by causing excessive ionisation, may lead to backfires, and thermostatic methods are therefore also used to trip the circuit-breakers or to operate an alarm in the cab at about 140°F.

In other branches of electrical engineering, rectifier valves have been developed with gas fillings to ensure ionisation at low temperatures, and using heated emissive cathodes instead of a mercury pool. Although it is possible that such rectifiers might be produced in a form suitable for traction service, they have the disadvantage at present of a shorter life than the conventional mercury-arc type because of a phenomenon known as "clean-up," the gas molecules tending to adhere to the inner surfaces of the envelope, where they serve no useful purpose. Methods exist for replenishing the active gas filling when certain gases are used, but the necessity in a locomotive or motor coach rectifier of using a metal tank instead of a glass envelope raises the further difficulty of the porosity of some metals to gases. These and many associated problems are subjects for research to which the development of rectifier motive power has given new importance. Semi-conductor rectifiers, such as germanium, are unaffected by low temperatures, but there is an upper temperature limit at which the rectifying action breaks down and a semi-conductor rectifier may be damaged by an overload of even a few seconds' duration. The importance of overload capacity in the performance of an electric locomotive has been a useful stimulus to the investigation of semi-conductor materials or alloys with improved temperature characteristics.

High-Speed Sets for Austrian Federal Railways

Four-coach trains for local and medium-distance services

General view of train from driving-car end

FOR the electrified local services of the Austrian Federal Railways, construction of a total of 35 four-coach trains has been authorised, of which 30 have been placed on order. Of these trains, 26 will be of Series 4030 with a top speed of 62 m.p.h. and four of Series 4130 with a top speed of 81 m.p.h. The coach-bodies for all the trains have been ordered from Simmering-Graz-Pauker, Graz. Electrical equipment for 10 trains will be supplied by Aktiengesellschaft für Elektricitäts Industrie, eight each by Allegemeine Elektricitäts-Gesellschaft and Brown Boveri, and four by Siemens-Schuckertwerke. The mechanical equipment is being supplied by Fa. S.G.P. Graz and the electrical equipment by a working partnership of the four large electrical companies, A.E.G., B.B.C., Elin, and S.S.W. (ABES). The suspension of the local-service trains (Series 4030) is by A.E.G. and for the inter-city trains (Series 4130) by Fa. S.S.W. The collaboration between the electrical firms extends to the production of the electrical equipment, so that the same firm will produce the same parts for all the trains. The erection of the electrical apparatus will be carried out by individual firms in a standard manner.

Coach Bodies

The four-coach trains of Series 4030 are made up of a motor coach, two intermediate trailers, and a control trailer. The distance between bogie centres is 53 ft. 5 in. The length of the motor and control coaches, over buffers, is 76 ft. and the intermediate coaches are 75 ft. 5 in. in length, giving a length of 303 ft. for the whole train. The Sécheron laminated spring drives, suitable for the play-free journal box guides of the motor coach, are of Winterthur type. All axleboxes are fitted with roller-bearings.

In the design of these local trains attention was given to providing a large number of seats and easy access for passengers to the trains. For this reason the doors were moved back to a position one-quarter of the distance along the coach. As double doors are provided it is possible for four passengers to get in or out at the same time. The total number of seats in the saloons is 272, and there are a further 74 folding seats in the entrance-sections.

Layout of Entrances

Two sliding doors are provided at each entrance, and as the doors cover the exit steps it is not possible to jump from the moving train, and the steps are completely covered while the train is in motion. The danger of a passenger falling from the train or a person being struck by an opening door is therefore eliminated.

Instead of the usual pleated bellows-

Interior of saloon, showing style of upholstery and luggage racks

Driver's compartment in control trailer

connections between coaches, rubber rolls are being used for the first time. The coaches can therefore be coupled more closely together. The furnishing of the saloons is striking. The seats, arranged in pairs, are upholstered with rubber hair. The windows are unusually wide, are divided at head height, and have proved themselves to be draught-free.

The motor coach is at one end of the train, so that it hauls the train in one direction and pushes it in the other. The power and control coaches have each one driving compartment only, at the ends of the train, and the train can travel equally well in either direction without need for shunting. A baggage compartment is provided next to the driving-compartment in the control coach and includes a seat for the guard.

Electrical Equipment

The electrical supply is single-phase current at 16⅔ cycles, 15 kV. The continuous output of the transformers is 850 kVA for traction, 30 kVA for auxiliary services, and 200 kVA for heating. The total hourly rating of the four traction motors is 1,000 kW, equivalent to 1,360 h.p. There are 28 power notches.

The complete electrical parts of the train were erected by A.E.G. and included certain new developments. One of these was the automatic control developed by A.E.G., which allows the driver to select varying degrees of acceleration, and another is the A.E.G. low-tension switchgear, which is built on to the transformer. The train also incorporates the Elin-built Secheron laminated-spring drive and traction motors developed by Elin.

The controller has six positions. The movement of the controller actuates relays which operate motor-actuated control switchgear. Acceleration to the speed selected by the controller is governed by a relay adjusted to prevent over-loading of the traction motors.

A servo-operated camshaft system with Maltese-cross drive controls the power switches, through servo-motors, in such a way that wrong switching is completely guarded against. The driver can thus give his full attention to the track and the observation of signals. Because of the low floor height, only 43 in., the transformer has had to be built very flat. Nevertheless a series of measuring and protecting devices are built in.

Traction Motors

The driving motors are of self-ventilated, single-phase, series enclosed type, with an additional air intake in the roof. Their characteristics are suitable for trains making frequent local journeys. The extra air intakes, situated over the entrances in the motor coach, are so designed that at normal train speed each motor receives 1 cu. metre of air per second not only without a fall in pressure, but at a little above atmospheric pressure.

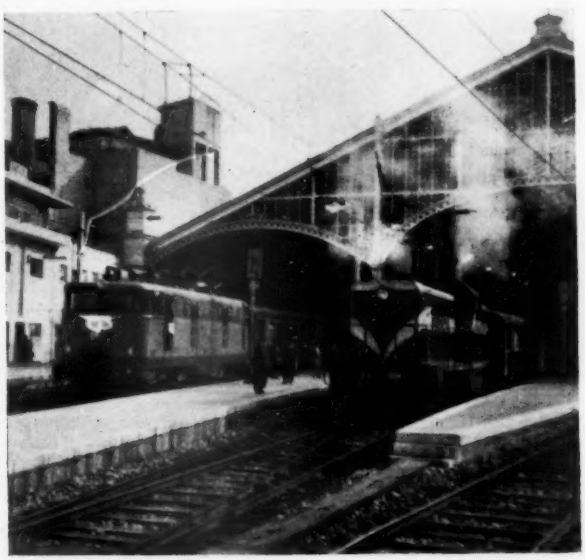
The trains are equipped with the usual safety devices, including one which tests the alertness of the driver every minute or so. These devices, in conjunction with rapid-acting brakes, make for a high degree of safety to be found only in journeys by rail.

Uniform Heating

The arrangement of the radiators along the side-walls of the coaches guarantees a uniform temperature in the passenger saloons and avoids overheating through proximity to radiators. The heating of each coach can be controlled individually from the power-coach. The heating current can be varied from 765 V. to 1,000 V. to take account of fluctuations in the outside temperature. Although the train is designed to operate as a whole, at times when traffic is slack it can work with the power and control coaches only or with one intermediate trailer instead of two.

These modern and attractive trains have good running qualities and have demonstrated that their electrical installations fully correspond to the expected performance. In each year, 1957, 1958, and 1959, eight trains will be put into service and the rest will commence work in 1960. The Series 4030 trains will run on the Villach-Klagenfurt-St. Veit and Villach-Feldkirchen-St. Veit sections and later on the main line between Vienna and Gloggnitz, and on the Salzburg-Bad Gastein, and Bludenz-Bregenz branches, and also on local services around Innsbrück and Linz.

Electric Working in Portugal



Photos] *[F. Fontaine*

Bo-Bo locomotive entering Lisbon Rossio terminus, showing lightweight equipment for 25-kV. electrification and portal of 1½-mile tunnel

Bo-Bo electric and American-built A1A-A1A diesel-electric locomotives at Rossio with trains of new stock (see our January 18 issue)

Overhead Line Construction in the London Midland Region

Catenary erection between Mauldeth Road and Wilmslow

PLANTING steel masts at the rate of one every 12 min. a special construction train is now moving along the line between Mauldeth Road and Wilmslow from 10 a.m. to 4 p.m. each day. The masts, which will carry overhead conductor wires, are the first to be erected for the initial stage of the electrification of the London (Euston) - Birmingham - Crewe - Liverpool-Manchester main line.

The front portion of the train carries a special boring machine which makes holes up to 10-ft. deep at intervals alongside the track, taking less than 2 min. for the actual excavation of each hole. This is followed by a crane which drops a steel mast into each hole and secures it in the correct position by a clamp. Finally a third section of the train mixes the concrete and pours it into the holes to make a firm foundation for the masts. The train can plant a mile of masts alongside one line of track in the daily period of 6 hr. It takes approximately 12 min. to erect each mast and the construction crews are aiming at a target of 10 min.

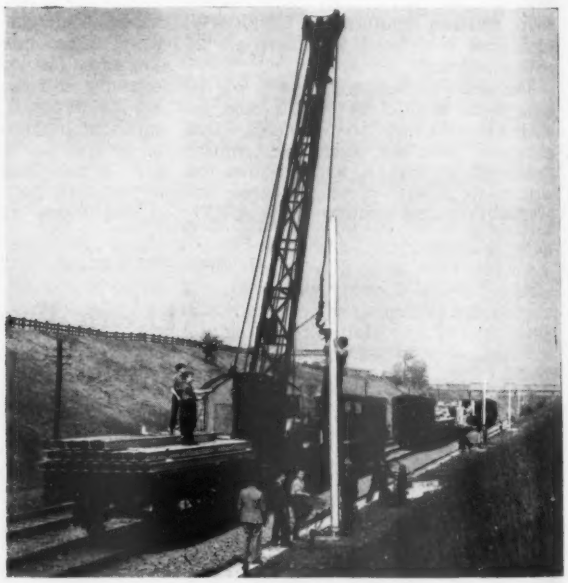
Lowering Track and Raising Bridges

The work of mast erection follows the completion of earlier work on the line which involved the lowering of the track in places and the raising of bridges to accommodate the overhead electrical equipment. The section of line Mauldeth Road to Wilmslow will be the first to be electrified under the British Railways, London Midland Region, plan for the electrification, first of the line Manchester to Crewe, and eventually from Euston to Manchester, Liverpool and Birmingham.

Mauldeth Road to Wilmslow will be the pilot project for the training of drivers and testing rolling stock for the London Midland Region electrification plan. It is expected that before the end of 1959 an electric train service will be in operation between Crewe and Manchester using the new British Railways standard 25-kV. 50-cycle a.c. supply derived from the national grid.

The mechanisation of the excavating and concreting operations is a development of the methods previously used, the mechanical earth boring unit and the concreting apparatus having been designed by the traction department of British Insulated Callender's Cable Construction Company in close collaboration with the engineers of the British Transport Commission. Later this year an improved type of concrete mixing and placing unit will be in operation and will enable work to be expedited.

Boring machine making a hole 10 ft. deep to accommodate steel mast



Steel mast erection team followed by cement mixing and filling unit

ELECTRIC LOCOMOTIVES FOR POLAND.—To supplement the 22 electric locomotives of Bo-Bo type and of 86 tons weight supplied in 1955, the so-called Hans Beimler works at Berlin-Hennigsdorf have delivered to the Polish Railways during the last 18 months a total of 19 electric locomotives of Co-Co wheel arrangement for the extending 3,000-V. d.c. system. These locomotives, which have six nose-suspended force-ventilated motors with single-reduction gears at each side, are said to have a top output of 6,530 kW. at 50 km.p.h., so that something new in traction motors must be installed. The 53-in. wheels are spread over a bogie wheelbase of 16 ft. and bogie pivots are pitched at 33 ft. 6 in. Top speed is 110 km.p.h. (68 m.p.h.) and weight 120 tons. The bogies, though of non-swing-bolster type, have spring side control and spring-supported side bearers. There are six air-brake cylinders per bogie and two blocks per wheel. Reference to the virtual completion of the Warsaw-Katowice-Gliwice electrification project was made on page 737 of last week's issue.

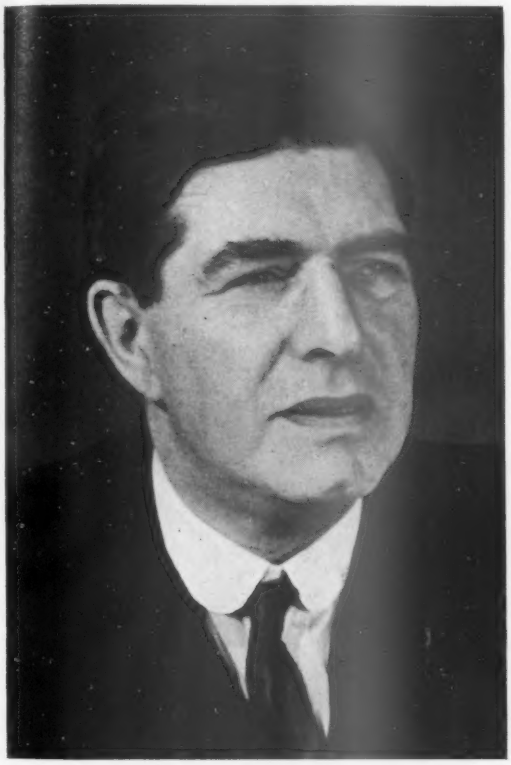
PIRAEUS-ATHENS ELECTRIC RAILWAY.—The Piraeus-Athens electric railway is to be extended northwards through the city by means of a new sub-surface line from Viktorias Station to Alissida, with intermediate stations at Metymnes, Nicopolios and Galatsiou. Beyond Alissida, trains will continue over an existing surface line to Kifissia. The northern section of the present underground line, from Viktorias to Attikis, will then be worked as a separate shuttle service, diverted in tunnel to the State Railways (S.E.K.) station.

CHAMBERLAIN INDUSTRIES' SCOTTISH DISTRIBUTORS. — Chamberlain Industries Limited, of Staffa Works, Leyton, London, E.10 (one of the Chamberlain group of companies), has appointed Hailes Plant Sales & Hire Limited, of 81, Great King Street, Edinburgh, 3, and Royal Exchange Buildings, Glasgow, C.2, as its Scottish distributors and to handle the sales of both the Jenbach diesel-driven air compressor and the Staffa range of mobile and shop cranes.

RAILWAY NEWS SECTION

PERSONAL

Mr. Harold Wilmot, Chairman & Managing Director of Beyer, Peacock & Co. Ltd., was named in a Resolution of the Municipal Council of the City of Paris for the award of the honour of the Silver Medal of the City. This medal, together with the relative certificate, was presented to Mr. Wilmot by Mr. Ruais, President of the Municipal Council, at a reception at the Hôtel de Ville on Monday, June 24. Mr. Wilmot was leading the British Delegation at the 11th International Scientific Management Congress which was held in Paris on this occasion.



Mr. C. K. Bird

Who has been awarded a C.B.E. in the Birthday Honours List

Mr. W. D. Farrington

Chief Inspecting Engineer, Crown Agents, who has been awarded the C.B.E.

Mr. C. K. Bird, General Manager, Eastern Region, British Railways, who, as recorded in our June 14 issue, has been awarded a C.B.E. in the Birthday Honours List, was born in 1897. He was educated at King's School, Grantham, and St. John's College, Cambridge, where he was a mathematical scholar, took first class honours in Part I of the Mathematical Tripos, and was placed as Wrangler in Part II. He served during the 1914-18 war with the Honourable Artillery Company and the Royal Artillery. Mr. Bird began his railway career with the former North Eastern Railway in 1922 and gained experience in the Commercial and Operating Departments in the head offices at York, and, subsequently, at outside stations. In 1926 he was appointed Chief Staff Clerk to the District Superintendent, Leeds, and, in 1928, to a similar position at Middlesbrough. In July, 1928, he was transferred to the Rates Office, York, where he represented the North Eastern Area on the Clearing House Classification and Container Committees. In 1929 he was appointed Head of the Rates & Statistics Section, Chief General Manager's Office, and, in 1932, also became responsible to the Chief General Manager for Parliamentary matters. In 1934, Mr. Bird was appointed Assistant Goods Manager (Southern Area), and, in 1939, Assistant Divisional General Manager (Southern Area). Early in 1943 he was appointed Acting Goods Manager (Southern Area), in which position he was confirmed in April, 1945. He became Acting Divisional General Manager (Southern Area) on the appointment of Mr. V. J. Barrington-Ward as a Member of the Railway Executive; Chief Regional Officer, Eastern Region, in 1947, and was re-named Chief Regional Manager of that Region in 1953. Mr. Bird, who was elected a Member of the Coastal Shipping Advisory Committee and of the B.T.C. Pension Scheme Central Committee in 1954, became General Manager of the Eastern Region in January, 1955.

A delegation of Rumanian railway experts has made a two-week visit to the Hungarian State Railways to study track maintenance, track-planning, and mechanisation problems. It is led by Mr. Alexandru Lungu, Manager of the Rumanian State Railways.

Mr. W. D. Farrington, Chief Inspecting Engineer, Crown Agents for Oversea Governments & Administrations, who, as recorded in our June 21 issue, has been awarded the C.B.E. in the Birthday Honours List, began his career with W. H. Allen, Sons & Co. Ltd. as a pupil to the late Sir Richard Allen after a three-year course in the Mechanical Engineering Department of the City & Guilds Engineering College. On completion of his pupilage and following a short period in the drawing office of W. H. Allen, Sons & Co. Ltd., Mr. Farrington joined the Crown Agents for the Colonies in 1927 as an Assistant Engineering Inspector in the Engineering Inspection Department. After serving in Manchester and London he was transferred in 1936 to the Engineering Contracts Department in Head Office at Millbank. He attained the rank of Deputy Chief Engineer in 1945, and, in 1950, he re-joined the Engineering Inspection Department. His appointment as Deputy Chief Inspecting Engineer took place in 1953, and he became Chief Inspecting Engineer in 1955.

Engineer Reinaldo A. Bianchi, who as recorded in our December 7, 1956, issue, has been appointed Chief of the Electrical Department of the General Mitre Railway, Argentina, is a civil, mechanical, industrial and electrical engineer, and obtained his degrees at the National University of La Plata. During his career Engineer Bianchi has held a number of important positions

with the Anglo-Argentine Tramways Company, the Buenos Ayres Transport Corporation (including service as Chief of the Underground Railways Department), the National Grain & Elevators Committee (including service as Chief of the diesel generating plants and repair shops), and with a leading firm of hydraulic engineers in Buenos Ayres. During his railway career he has occupied the positions of Technical Assistant and, later, Chief of Electric & Diesel Rolling Stock, Buenos Ayres Western Railway, and that of Chief of the Electrical Department, General Mitre Railway. He is the author of a number of works on engineering subjects.

Mr. James B. Thom

European Manager, Canadian National Railways, 1947-57

Mr. Joseph C. Kenkel

Appointed European General Manager, Canadian National Railways

Mr. James B. Thom, M.C., B.Sc., European Manager, Canadian National Railways, who, as recorded in our May 3 issue, has retired, was born in Montreal in 1893 and educated at Upper Canada College, Toronto, and McGill University, Montreal. During the 1914-18 war he served with the Canadian Engineers in Canada, England, and France, attaining the rank of Captain. He was awarded the Military Cross in 1918. Mr. Thom began his railway career with the Valuation Department of the Lehigh Valley Railroad in 1920. He served with this system until 1924, when he joined the Foreign Freight Department of Canadian National Railways, serving successively as Special Representative to the General Freight Traffic Manager, Montreal; Assistant to Vice-President in charge of Traffic, Montreal, and European Traffic Manager. He was appointed European Manager in January, 1947. While in England Mr. Thom has served on the Council of the Canadian Chamber of Commerce in Great Britain and was President of that body in 1953. He has been President of the McGill Graduates Society of Great Britain and is now Vice-President for Europe of the Graduates Society of McGill University. Among other activities he has represented the Shipping Federation of Canada at various international conferences of the International Shipping Federation and the International Chamber of Shipping. He is a member of the Engineers Club of Montreal; the Royal Automobile Club, London; the Royal Thames Yacht Club, London; the Transportation Club, London, and the St. George's Hill Golf Club, Weybridge.

At Paddington, on June 26, the General Managers of five of the six Regions of British Railways (one General Manager was unavoidably absent) entertained to luncheon Mr. James B. Thom, European Manager of Canadian National Railways, who, as recorded above, has retired. Warm tributes were paid to Mr. Thom's unfailing help, kindness, and courtesy in his relationships with the Regions of British Railways.

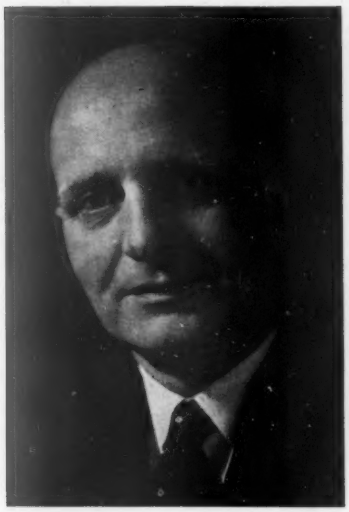
Mr. John P. DeLaney, General Manager of the Transportation Division of Alco Products Inc., has been elected a Vice-President of that company.

Mr. C. K. Jaswell, Mr. R. Carey, and Mr. H. Ridehaigh, for some years senior members of the staff of Sir William Halcrow & Partners, have been taken into partnership by that firm.

Mr. Joseph C. Kenkel, Assistant to Vice-President of Operations, Canadian National Railways, who, as recorded in our May 3 issue, has been appointed European General Manager for that system with headquarters in London, began his railway career in 1917 when he joined the Operating Department of the Grand Trunk Railway (now part of the C.N.R. system). In 1923 he was transferred to the office of the late Sir Henry Thornton, President of the then newly-created Canadian National Railways. He was posted to the office of the Vice-President of Operations in 1938, and was promoted to be Assistant to the Vice-President of Operations in 1949. Mr. Kenkel has served for 12 years on Hampstead (Quebec) Town Council and is a Past President of the Municipal Association of that town. He recently served as Area Chairman for the Red Cross Campaign in Metropolitan Montreal. He was President of the Canadian Railway Club in 1955. He is a past Commodore of the Pointe Claire Yacht Club, a member of the Royal St. Lawrence Yacht Club, a Past President of the Mount Stephen Club in Montreal, and an elder of the Dominion Douglas United Church. Other affiliations include the Canadian Club and the McGill Associates.

Elsewhere in this issue editorial reference is made to the re-organisation, effective from July 1, of the Mechanical, Electrical, and Motive Power Departments of the Western Region of British Railways. In connection with this re-organisation, it is announced that Mr. R. A. Smeddle, Chief Mechanical & Electrical Engineer, Swindon,

Mr. S. L. Furnivall
District Engineer, Woking, Southern Region, who is retiring



Mr. R. A. Hamnett
Appointed District Engineer, Woking, Southern Region

Mr. H. E. Hedges
General Assistant to General Manager, Western Region, 1942-57

will continue in that office, and that Mr. H. E. A. White, at present Motive Power Superintendent, Paddington, will continue in the re-designated appointment of Running & Maintenance Officer.

Mr. S. L. Furnivall, M.M., M.I.C.E., A.M.Inst.T., District Engineer, Woking, Southern Region, British Railways, who, as recorded in our May 17 issue, is retiring on September 30, was educated at Rutlish School and began his railway career as an apprentice in the Engineer's Department of the L.S.W.R. in 1908. After experience in various workshops and the Bridge Section Mr. Furnivall was transferred to the Chief Engineer's Office at Waterloo. On the outbreak of war in 1914 he joined the Royal Field Artillery, Territorial Army. While with the 47th London Division on the Somme in 1916 he was awarded the Military Medal. He was later transferred to the Royal Engineers (Railways Construction). He returned to L.S.W.R. service in 1919, and was appointed an Engineering Assistant. He subsequently transferred to the Permanent Way Department, of which he was Acting Chief Assistant at the time of amalgamation. In 1935 he was appointed Permanent Way Assistant to Mr. G. Ellson, the then Chief Engineer, and on the re-organisation of the Chief Civil Engineer's Office in 1944, was transferred to the London West Division as Assistant Divisional Engineer, in which capacity he was engaged on general divisional work, including the repair of damage caused by enemy action. During Mr. Furnivall's career he was responsible to the Chief Engineer for the re-modelling, setting out and manufacture of the permanent way connections at all the Southern Railway London terminal stations, and the design of all switches, crossings and layouts was carried out in the drawing office under his supervision. He is a Fellow of the Permanent Way Institution, of the London Section of which body he was Chairman for 1943 and 1944; he was also Chairman of the Diamond Jubilee Committee appointed by the Institution in 1944 and of the Southampton Section of that body for 1946. In the same year, Mr. Furnivall became Central Divisional Engineer, Southern Railway. He was appointed Divisional Engineer, London West Division, in 1947, and later redesignated District Engineer, Woking. It is this position from which he will retire in September.

Mr. R. A. Hamnett, who, as recorded in our May 17 issue, has been appointed District Engineer, Southern Region, British Railways, joined the Southern Railway in 1928 in the office of the District Engineer, Ashford (Kent). In 1944 he was made acting Assistant Divisional Engineer, and, in the following year, Assistant to the Divisional Engineer. In July, 1946, Mr. Hamnett was transferred to Exeter as Assistant to the Divisional Engineer, becoming Assistant Divisional Engineer in October of that year. From October, 1948, to October, 1949, he acted as Divisional Engineer, and was then appointed to that position. Mr. Hamnett was Editor and part author of the textbook *British Railways Track* first published by the Permanent Way Institution in 1943 and he has lately been engaged on a new and enlarged edition which was published in 1956. He will take up his new duties on October 1.

We regret to record the death, at the age of 82, of Mr. Arthur Lee Barber, Commercial Manager of the London Passenger Transport Board from 1933 to 1939. Mr. Barber was educated at Leeds Grammar School and Queen's College, Oxford. After a brief career as schoolmaster and private tutor he joined the staff of the British Electric Traction Co. Ltd. in 1899, subsequently becoming Secretary to the Committee for Associated Undertakings (the predecessor of the British Electrical Federation). In 1901 he was appointed Secretary to the Committee of Croydon Tramways (then leased to the B.E.T.) and thus began his long association with road transport in the London area. In 1902 he became Secretary of Metropolitan Electric Tramways Limited, and, in 1912, on the formation of the London & Suburban Traction Co. Ltd., Secretary of that company and also of the L.U.T. (previously an associate of the District Railway). After the outbreak of war he joined the Underground staff at Electric Railway House, subsequently becoming Acting Joint Manager of the North Metropolitan Electric Power Supply Company (a subsidiary of Metropolitan Electric Tramways). He continued to hold the offices of Secretary of the M.E.T., the L.U.T., and the L. & S.T. until 1921, when he was appointed Commercial Manager of the Underground group. For a time he was also Acting Publicity Manager. On the formation of the L.P.T.B. in 1933 Mr. Barber was appointed Commercial Manager of that organisation, and held this position until his retirement.

Mr. S. J. Judson, Assistant (Wages Staff) to Regional Establishment & Staff Officer, North Eastern Region, British Railways, has been appointed Assistant Regional Establishment & Staff Officer, North Eastern Region.

Mr. H. E. Hedges, General Assistant to the General Manager, Western Region, British Railways, retired last month after more than 51 years of service with the former Great Western Railway Company and Western Region of British Railways, during which time he served under six General Managers. Mr. Hedges began his career in the Office of the Superintendent of the Line and, after gaining experience in various sections of that Department, he was transferred in 1919, to the General Manager's Office as Private Secretary to Mr. Charles Aldington and, subsequently, to Sir Felix Pole. He later took charge of the General Section of the Department for a period of 10 years and was appointed an Assistant to the General Manager in 1939, becoming General Assistant in 1942. Mr. Hedges, who was a Brunel Medallist of the London School of Economics and a fellow of the Royal Statistical Society, had been a member of the Railway Statistics Committee since 1930; Chairman of the G.W.R. Suggestions Committee from 1939 and of the Western Region Sub-Committee since 1949, and Chairman of the Committee of the Western Region Lecture and Debating Society for 18 years—a record term of office. Mr. Hedges was the recipient of numerous good wishes at retirement functions held recently, including a farewell lunch presided over by Mr. K. W. C. Grand, at which Sir James Milne and Mr. H. H. Phillips were present with office colleagues. Illustration on page 24 shows the presentation to Mr. Hedges by Mr. E. C. Cookson, Assistant

Civil Engineer, on behalf of the Junior Officers' Mess at Paddington, of which Mr. Hedges had been a member for 18 years.

Mr. Sydney J. Judson has been appointed Assistant Regional Establishment & Staff Officer, York, North Eastern Region, British Railways.

Mr. Eric Dalton, Assistant District Operating Superintendent, Darlington, North Eastern Region, British Railways, has been appointed Assistant to General Manager (General), York.

We regret to record the death on June 22, at the age of 65, of Mr. Norman Jenkins, who retired from the position of District Commercial Manager, Newport, Western Region, British Railways, in September, 1954. Mr. Jenkins joined the service of the former Great Western Railway at Cardiff in 1906 and became the Goods Agent there 40 years later. He was appointed District Commercial Manager, Newport, in May, 1949.

We regret to record the death on June 14, at the age of 59, of Mr. B. H. Carter, Head of the Staff Section of the Departments of the Chief Mechanical & Electrical Engineer and Carriage & Wagon Engineer at Swindon. Mr. Carter began his railway career in 1912 as a clerk in the Chief Mechanical Engineers' Department at Swindon and, from January, 1916, apart from military service from October, 1916, to November, 1919, was employed in the C.M.E.'s General Staff Office. In November, 1946, Mr. Carter was made Assistant Head of the Staff Section and, in 1949, was appointed Head of the Staff Section. Mr. Carter represented South Ward as an Independent Member of Swindon Town Council from June, 1949, until May, 1953, and was a member of the Swindon Youth Employment Committee at the time of his death. He was also a Freemason and, in February last, was installed as Worshipful Master of the Lodge of Remembrance.

The Minister of Transport & Civil Aviation, with the approval of the Prime Minister, has appointed Mr. R. B. Lang, O.B.E., C.A., to be Under Secretary & Director of Finance in place of Mr. I. Wild, C.B., C.M.G., O.B.E., who is retiring on June 30.

The Minister of Transport & Civil Aviation has appointed Mr. R. R. Goodison to be Under Secretary of the Railways & Inland Waterways and Rates & Charges (Inland Transport) Group of Divisions of the Department, succeeding Mr. J. R. Willis, who has retired.

The following changes in organisation, with effect from July 1, are announced by London Transport:—

Department of the Chief Mechanical Engineer (Road Services)

The separate North and South Divisional organisations (Country Buses & Coaches) will be abolished and replaced by a single divisional organisation under the control of a Divisional Engineer (Country Buses & Coaches), who will be an Officer of the Executive. Mr. W. I. Kirshner, Divisional Engineer (Central Road Services), South-east Division, will be transferred to this position.

Department of the Operating Manager (Country Buses & Coaches)

Mr. H. F. C. Adcock, Divisional Superintendent (South), Country Buses & Coaches, has been appointed an Officer of the Executive.

Department of the Chief Establishment Officer

Mr. D. H. Mills, Principal Executive Assistant, is promtoed an Officer of the Executive with the title of Establishment Officer.

Mr. J. W. Mills, O.B.E., M.I.Mech.E., for over 12 years a Director of Armstrong Whitworth (Metal Industries) Limited and Jarrow Metal Industries Limited, has decided to relinquish his seat on the boards of those two companies. He has no intention of giving up all business activities in his retirement, and is retaining directorships of certain other companies.

Mr. K. W. P. Kirton, Assistant General Manager, Ribble Motor Services Limited, has been appointed General Manager of Jamaica Omnibus Services Limited, succeeding Mr. I. L. Gray, who will shortly return to the United Kingdom. Mr. Kirton will leave for Jamaica on July 23. Mr. Gray has been appointed General Manager, Rhondda Transport Co. Ltd., succeeding Mr. T. L. C. Strange, who becomes General Manager, Devon General Omnibus & Touring Co. Ltd.

Mr. Douglas Brown has joined Black & Decker Limited as Contracts Sales Manager. He takes up his new appointment in August.

Mr. R. J. Dixon and Mr. S. W. Perkins, Directors of Wickman Limited, have been appointed to the board of Arthur Scrivener Limited.

Mr. A. I. Johnston, General Manager, and Mr. R. G. Lyttelton have been appointed directors of Guest Keen & Nettlefolds (Cwmbran) Limited.

Mr. A. Muir has been appointed Manager for the Scottish & Northern Ireland Region, Tecalemit Limited. The company's Regional office is at 86, Cambridge Street, Glasgow, C.2.

Mr. L. D. Roper has been appointed Sales Manager of Williams Alexandra Foundry Limited.

We regret to record the death of Mr. Dugas, Directeur, Etudes Générales, Société Nationale des Chemins de Fer Français.

In our last week's issue we recorded the names of the Chairman and Directors of the newly-formed company Siemens Edison Swan Limited. Dr. J. N. Aldington was correctly named as Managing Director, but the list of Directors which followed should have been headed by Dr. T. E. Allibone, and not Dr. T. E. Aldington, as stated.

The Westinghouse Brake & Signal Co. Ltd. announces the following board appointments: Mr. G. W. H. Richardson, Mr. T. J. Aldridge, Manager, Signal & Colliery Division; Mr. N. G. Cadman, Works Manager; Mr. J. W. G. Kershaw, Manager, Brake Division; Mr. L. E. Thompson, Manager, Rectifier Division.

Mr. William Taylor, General Freight Agent for Canadian National Railways in Europe with headquarters in London, retired at the end of last month after some 50 years of service with the company. He has been succeeded by Mr. John Matthews, who is succeeded as District Freight Agent, Liverpool, by Mr. Leslie Williams. Mr. James C. Fielding will succeed Mr. Williams as Assistant to European Manager in London

Presentation to Mr. H. E. Hedges, retiring General Assistant to General Manager, Western Region, British Railways, by Mr. E. C. Cookson, Assistant Civil Engineer, Western Region, on behalf of junior officers of Paddington (see also page 23)

NEW EQUIPMENT AND PROCESSES

Resilient Sink Unit

THE Acrylasink unit, suitable for station buffets and refreshment rooms, staff canteens and similar catering centres, is now available. The unit top is made from a development of perspex and does not stain in normal use, is immune from rust or other corrosion, and is tough and durable; the surface does not chip.

Because of its resilient properties, accidental breakage of crockery is reduced and the washing "clatter" is minimised. Another advantage is stated to be the low thermal conductivity of the sink, which keeps water hot for longer periods, thereby effecting an economy as washing-up water does not need replenishing so often.

The unit is available with the sink bowl on the right or left-hand side, known as Universal 42 model. Another model has a draining area on either side of the sink unit. At present, only the top of this latter type is available. With the former versions, either a complete sink unit, with drawers and cupboards, as shown in the illustration, or the separate top can be obtained.

The price of the Universal 42 is, complete sink unit, 19½ gns., top only, 9 gns. Double drainer, top only, 12 gns. Full details may be obtained from the manufacturer, Peerless Built-in Furniture Ltd., Western Avenue, Perivale, Greenford, Middlesex.

Range of Small Pipe Fittings

A RANGE of fittings has been developed which may be used on diesel locomotives and railcars for small pipework of various applications. Apart from pipe fittings, screw-down valve and rotating banjo units are also being produced.

The pipe fittings are of the cone end type for use with flared tube, and are made with a U.N.F. thread. They can be used externally on hydraulic and air circuits. Instead of the Briggs male end a taper B.S.P. thread is used to make the part more universal to manufacturers in this country.

The screw-down valve is at present made in one size only with a full $\frac{5}{16}$-in. way. It is machined with ¼-in. B.S.P. threads and can also be supplied with a number of adaptors for solderless unions. Applications at present include wind-screen wiper and washer control; the valve is stated to give improved control and longer life than a conventional plug cock. The handle of the valve is of bakelite or brass.

The rotating banjo union, which may be used to lengthen the life of flexible tubes by permitting slow rotation of the joint up to 360 deg., can also be supplied for screwed pipe threads or adaptors for solderless union from $\frac{1}{8}$ to 1 in. B.S.P. Unions can be used for pressures up to 300 lb. per sq. in. and are also suitable for hydraulic or air services.

Full details of all these items, including price and delivery, may be obtained from the manufacturer, P. L. Willcox Limited, Tyseley, Birmingham, 11.

Land Clearance Implement

THE Super Swipe rotary cutter is a general-purpose machine suitable for land clearance and appears to be of application for small-scale railway civil engineering work.

Special features include: flexible chain cutters to enable a light machine to be robust in operation; strong side skids to protect the cutting head and retain cut material for shredding; special chain linkage to avoid strain on hydraulic system and allow the ground contours to be closely followed; castor wheel to permit quick turning and reversing; simple height adjustment requiring no spanners. In addition, the Super Swipe can quickly be fitted to the majority of British tractors equipped with a three-point linkage.

The dimensions of the unit include an overall height (at lowest setting) of 32 in. overall length of 92 in., overall width of 60 in., cutting width of 54 in., weight of 390 lb., operating speed of 1 to 8 m.p.h., maximum cutting height of 12 in. and minimum cutting height of 3 in.

The Super Swipe, which is towed behind the tractor, is driven through a shaft and gearbox from the tractor power take-off. The lower link arms of the tractor engage with the appropriate pins on the implement frame, the large link on the lift chain being connected to the tractor top hitch point.

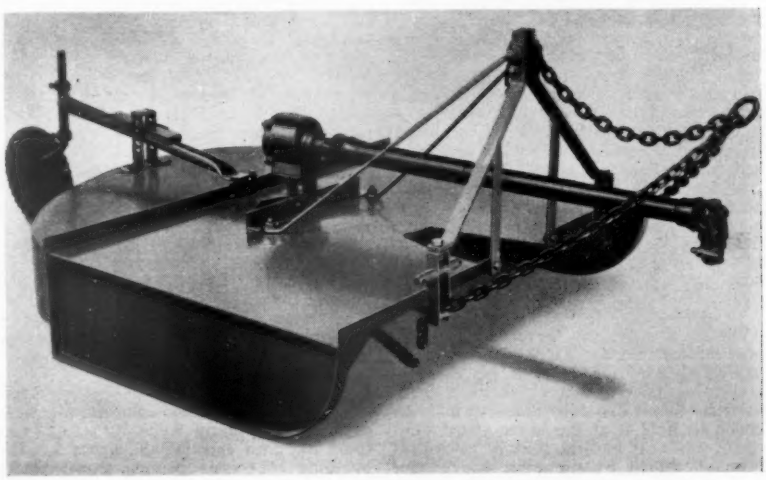
The price of the Super Swipe is £95. Delivery period can be obtained from the manufacturer, Wolseley Engineering Limited, Wolseley Works, Electric Avenue, Witton, Birmingham, 6.

Flexible Metallic Connectors

A RANGE of flexible metallic connectors has recently been introduced which are suitable for low-pressure pipe runs, where possible misalignment, and expansion or vibration may be encountered. They have been applied to carrying water, oil, petrol and appear to be suitable for some applications on diesel locomotives.

The connectors can be used for suctions or pressures of up to 30-60 lb. per sq. in., and temperatures of around 100°C. They consist of seamless bronze or stainless steel flexible bellows brazed to flanged or screwed end fittings to suit any particular application. High frequency induction brazing is used on these connectors. They are pressure tested before despatch.

The manufacturer, Precision Heating Limited, 142a, Canbury Park Road, Kingston-on-Thames, Surrey, is prepared to supply similar items to specific requirements over a range of ¼—2-in. bore.



Ministry of Transport Accident Report

Yarmouth Vauxhall, August 10, 1956: British Railways, Eastern Region

Colonel W. P. Reed, Inspecting Officer of Railways, Ministry of Transport & Civil Aviation, inquired into the accident which occurred at about 1.12 p.m. on August 10, 1956, at Yarmouth Vauxhall when the 12.26 p.m. special passenger train from Norwich, consisting of eight coaches and van, drawn by a Class "D16" 4-4-0 engine No. 62524, approaching under incorrect clear signals to No. 2 platform line, collided at about 10 m.p.h. with a similar engine, No. 62523, which was at the head of, but not yet coupled to, five empty coaches. There was considerable damage to the front ends of both engines but no derailment and only minor damage to the coaches. Eight passengers sustained minor injuries or shock and four were taken to hospital but not detained. Normal working was resumed in two hours. The weather was fine and clear. The accompanying diagram shows the lines, signals, etc., involved in the case, which arose from a momentary mistake on the part of an experienced relief signalman.

The approach to the station is on a gradual curve and the view from an oncoming train is restricted, first by an embankment and over-bridge, the latter being about 220 yd. from the platform ramps. It becomes good, however, as the bridge is approached unless an outgoing train happens to be passing. There are no track circuits or interlocking block controls and the chance of a train being signalled to an occupied line has always been recognised; the rules require that collars shall at such times be placed on the relevant levers. These collars are kept on the instrument shelf above the levers on which they are most frequently used.

Course of Events and Evidence

The relief signalman, a man of 52 with long service and an excellent record, explained that at about 1.10 he received "entering section" for the train from Norwich from Breydon Junction and intended to hold it at the home signal until a path was clear into the station. Platform 2 was occupied by the pilot engine and empty coaches, and Nos. 1 and 4 also were occupied, but No. 3 was not. Approach to that, however, was blocked owing to the route having been set for an outgoing train to leave platform 4, for which "line clear" had not yet been received and which was being sent forward to the advanced starting signal. This train obscured the view of the driver of the incoming one. Had the working been punctual the empty coaches would have been out of the way in time for the latter train to run to platform 2, as was usual. The signalman admitted that he pulled the lever for the home signal to that platform which he knew to be occupied and made no excuse for the mistake. There had been some little dislocation of working caused by a diesel train failure at Breydon Junction half an hour before but this, he said, gave him no excuse for the lapse, which he deplored and for which he could not account. Realising his error as the engine was passing his box, he ran to the window to try and attract attention but did not have time to pick up his flag. Afterwards he found collars on the levers leading to platforms 1, 3, and 4; he could not remember if he had put one on the lever for platform 2 but thought he must have done so, as he was meticulous in the use of them. He could only suggest that he must have removed the one from that lever and pulled it in a moment of aberration, instead of removing the one applying to platform 3, unnecessary at the moment, as the lever was locked by the route set out of platform 4; he would have had to remove the collar during the next series of movements to admit the train from Norwich to platform 3 after the departing train had passed.

The stationmaster and a district inspector confirmed that this signalman had a reputation for his care in the use of lever collars.

The driver of the arriving train, who had a clear run through Breydon Junction, observed the home signal at clear with route indicator showing the figure 2. The outgoing train was passing slowly under the bridge and he did not get a clear sight of the engine in the platform until he had passed the signalbox, when his first action was to look at the points ahead to see if the route had been changed to platform 1. He then applied the brake, with the working of which he was fully satisfied, and shouted to his fireman. He had travelled perhaps 70 yd. while his mind registered the situation and he checked the lie of the points.

The fireman saw the signalman waving his arms but did not immediately understand his train was meant to stop. A moment later the driver warned him and he opened the sanders and had completely screwed down the hand brake when the collision happened.

The pilot engine driver had backed it on a few minutes before and been looking to the rear and side for the shunter. Suddenly he saw the approaching train a short distance ahead, put his Westinghouse lever in the full release position and caught hold of his fireman, who was unprepared, to steady him; neither was hurt.

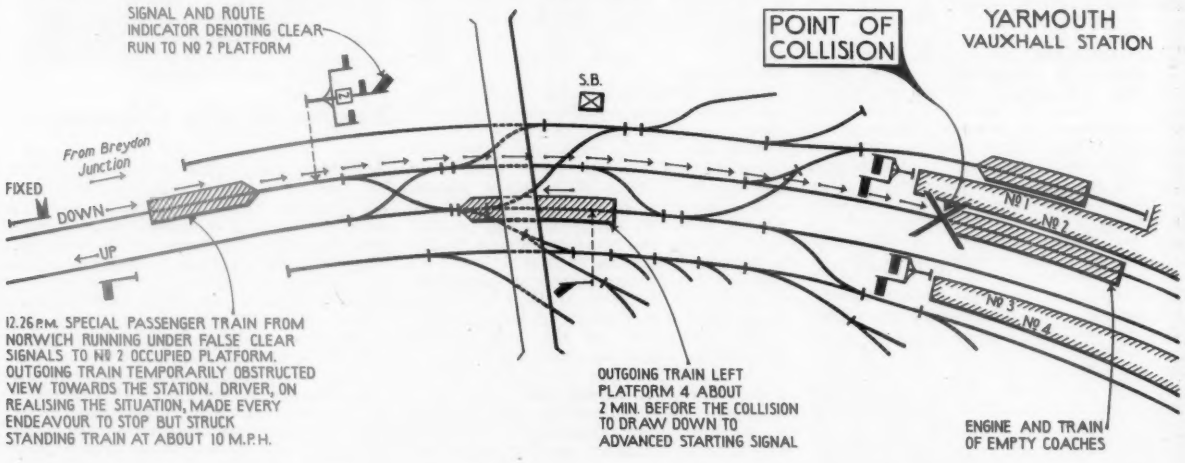

SIGNAL AND ROUTE INDICATOR DENOTING CLEAR RUN TO Nº 2 PLATFORM
POINT OF COLLISION
YARMOUTH VAUXHALL STATION
S.B.
From Breydon Junction
FIXED
DOWN
UP
Nº 1
Nº 2
Nº 3
Nº 4
12.26 P.M. SPECIAL PASSENGER TRAIN FROM NORWICH RUNNING UNDER FALSE CLEAR SIGNALS TO Nº 2 OCCUPIED PLATFORM. OUTGOING TRAIN TEMPORARILY OBSTRUCTED VIEW TOWARDS THE STATION. DRIVER, ON REALISING THE SITUATION, MADE EVERY ENDEAVOUR TO STOP BUT STRUCK STANDING TRAIN AT ABOUT 10 M.P.H.
OUTGOING TRAIN LEFT PLATFORM 4 ABOUT 2 MIN. BEFORE THE COLLISION TO DRAW DOWN TO ADVANCED STARTING SIGNAL
ENGINE AND TRAIN OF EMPTY COACHES

Diagram showing circumstances of accident at Yarmouth Vauxhall, British Railways, Eastern Region, August 10, 1956

Inspecting Officer's Conclusions and Remarks

The accident was caused by the signalman's inexplicable lapse. He said he had no troubles on his mind and appeared to be in good health and mentally alert. He had been passed as fit medically two years before. Colonel Reed has no hesitation in accepting that he was not normally lax in the use of lever collars and can only assume that he freed and pulled the wrong lever in a moment of aberration, as he suggested. Such instances are extremely rare.

Track circuit in the platform line would have prevented this mistake. There is an extensive programme for the installation of such controls, though Yarmouth Vauxhall, where working conditions are better than at many other stations, has not been given high priority for it. There is, however, now an additional reason for providing track circuiting here. View from the signalbox into the terminal end of the station is obstructed when platform 3 or 4 is occupied, owing to curvature, and with

the increasing use in future of the new diesel train sets the number of occasions on which a short train will be out of sight will be more frequent. The Eastern Region is understood to be preparing plans to install track circuits.

No doubt the driver would have stopped short if his view had not been masked by the outgoing train. Had he applied the brakes instantly on seeing the pilot engine he might have done so but he had been admitted by a clear running signal and Colonel Reed does not blame him for his momentary hesitation. He is also satisfied that the driver was properly alert, and mentions specially the fact that at this comparatively small terminal station there were more than a dozen members of the staff who had passed the first aid examination by their own voluntary efforts; three were present and gave immediate attention to the injured passengers.

International Railways of Central America

In the year ended December 31, 1956, the volume of business of the International Railways of Central America remained much the same as in 1955. Net revenue from railway operations before taxes and fixed charges amounted to $3,388,342, and net income was $1,650,539 compared with $1,663,025 in 1955. The operating ratio was 80·4 per cent compared with 79·9 per cent in 1955 and an average for the past 10 years of 84·6 per cent.

Railway operating revenues were $17,303,950, including a credit of $522,080 for revenues received against the amount owing to the company by the Guatemala Government. Although the 1955-1956 coffee crop was considerably lower than that of the previous year, the 1956-1957 crop is exceptionally good, and heavy shipments of coffee during November and December, 1956, made up the deficit in export coffee revenues which occurred in the earlier months of the year. Revenues from import traffic showed a further increase over previous years, but there was a substantial reduction in local freight and passenger revenues because of increased road competition on the Pacific Coast of Guatemala resulting from the completion of many miles of paved highways throughout that area. Steps are being taken, including the revision of some tariffs, to meet this competition and retain business for the company.

Expenses

Railway operating expenses were $13,915,607 which was $606,482 in excess of total operating expenses in 1955. The increase in expenses was mainly the result of a substantial increase in cost of fuel oil. It is hoped that economies from the operation of the six new diesel-electric main-line locomotives and seven new diesel-electric yard locomotives, will off-set to some extent the additional expense resulting from the higher cost of fuel oil and possible increase in wage costs.

There was a net increase of $2,801,403 in investment expenditure compared with 1955. The major portion of this was for the 100 covered vans and 50 flat wagons mentioned in the 1955 report, 16 new passenger coaches built in Guatemala and El Salvador, and the 13 diesel-electric locomotives already referred to. Construction of the extension to the company's pier at Cutuco in El Salvador has been delayed by inability to obtain delivery of some of the materials required. Nothing has been done in connection with the erection of a new station building in Guatemala City, partly because of the pressure of other more important and heavy maintenance and construction work.

Although the Guatemala Government has purchased material for the construction of a rail connection between the Government port of Santo Tomas and the main line of the company, the only work done to date is a survey of the location of the line. It is expected that construction will be commenced in the near future.

The United Fruit Company has signed a new contract with the Guatemala Government as a result of which work has already been commenced on the re-establishment of its operations in the eastern section of the country. The Fruit Company's present plans provide for the planting in that area of several thousand acres of banana cultivations in the immediate future which will give the railways increased short-haul banana traffic to Puerto Barrios in the latter half of 1958 and future years.

Crumlin Viaduct Centenary

Cheap construction with durability

The Crumlin Viaduct, in Monmouthshire, in what is now the Western Region of British Railways, was opened on June 1, 1857, to carry a double line of railway 200 ft. above the bottom of a deep valley. Some 4½ miles west of Pontypool, it was built to carry the Taff Vale Extension of the Newport, Abergavenny & Hereford Railway, which at that time formed the Newport Section of the West Midland Railway. It cost only £41 7s. per foot run, a very low figure even for those days.

The viaduct is in two parts, one of seven spans, the other of three, separated by a short distance, less than the length of one of the spans. All the spans are alike, of deck type, 150 ft. long and each consists of four pin-jointed, riveted wrought-iron Warren-truss girders, supported on piers each made up of fourteen 12-in. dia., cast-iron columns, braced together as the illustration shows. The total length including the masonry abutments is 1,658 ft.; the height from the bottom of the foundations to the top of the handrail is 208 ft.

Thomas William Kennard was the engineer and his design, made in competition with several other tenderers, was chosen by Charles Liddell, Engineer of the Taff Vale Extension. Most of the piers are founded on rock but two of the highest are on masonry built up from hard gravel, some 14 ft. below ground level. The iron castings, of which there were 1,196 tons in the piers, were made at Kennard's works at Falkirk, Scotland, and the machining and fitting was done at the site of the bridge. There are over 880 tons of wrought-iron in the girders and bracings. This wrought-iron, having an ultimate tensile breaking stress of 29—30 tons per sq. in., came from the Blaenavon Iron Company. The girders were fabricated in the Crumlin Viaduct works, specially constructed near the site and engaged subsequently in making girder bridges for Italy, Spain, Portugal, and India.

Girder Erection

The girders were assembled on the ground, and lifted singly—a weight of 25 tons including stiffening gear—by rope and tackle. Girders were hoisted up at the

The Crumlin Viaduct, Monmouthshire, which has survived 100 *years with only minor alterations and repairs*

centre of the piers and subsequently traversed sideways and lowered on to their bearings. The ratio of the length to the width of the compression chord of one of the girders was 200, and although the first girder was successfully lifted to the top of the piers on December 3, 1854, and remained in position without lateral support for several days, the second collapsed whilst being hoisted and caused the death of a man riding it. Subsequently banjo bracing was applied to the top chords to stiffen the girders during erection. Twenty men were employed in lifting the girders; it occupied them all one day to lift a girder in the highest part of the viaduct and it was usually set or finally fixed the same night, the men's time costing about £5. The last girder was erected on December 17, 1855.

Each pair of girders was braced laterally in the planes of the top and bottom chords, and a decking 26 ft. wide, of 6-in. Baltic timbers laid across the tops of the girders carried the two 4-ft. 8½-in. guage tracks. The viaduct was tested on May 7, 1857, when a maximum central deflection of 1¼ in. was recorded under a span loaded with trains on each track totalling some 380 tons.

Construction Cost

The cost of the viaduct was £62,000, divided as follows:—

	£ s. d.
Material and labour in 10 spans of wrought iron, including saddles, bearing pieces, and cross-bracing	23,357 16 10
Lifting the girders to top of piers, and all the temporary apparatus used	4,636 14 2
Material and labour in the piers, erecting and turning columns, all the temporary apparatus used in the piers, such as derricks, blocks, inclines, wins, etc., from the foundations to the setting of triangles, and including the masonry abutments	30,572 11 3
Timber	1,340 1 11
Sundries, including handrail, testing, painting, etc.	1,532 19 2
Accidents and breakages	559 16 8
	£62,000 0 0

The timber decking was replaced by cross girders, rail bearers and a plate floor in 1868, when also some strengthening of the inner girders was carried out. In 1928 the decking was again renewed and in the following year the line across the viaduct was altered to a single cross-sleeper, ballasted track on the longitudinal centre line of the spans.

Durability of Original Structure

Apart from these and other minor modifications and repairs, the Crumlin Viaduct remains today much as it was a century ago; and although the passage of some of the heavier classes of locomotive is prohibited and the maximum speed of trains is limited to 8 m.p.h., this historic bridge continues to carry passengers and mineral traffic of a busy and important line.

Editorial reference to the viaduct and to its possible reconstruction was made in last week's issue.

TILLEY LAMP CO. LTD. RESULTS.—The Tilley Lamp Co. Ltd., manufacturers of paraffin lamps and radiators, is not paying a final dividend, so that the 10 per cent interim paid last December becomes the total for the year ended March 31, 1957, against 20 per cent for the previous year. The net profit was £10,268 (£46,766) after tax of £6,504 (£38,746).

Staff and Labour Matters

Threatened Strike by Busmen

Reference was made last week to the threatened strike of provincial bus employees because of the inadequacy of the offer which the employers' side of the National Council for the Omnibus Industry made in response to the claim for more than 20s. a week.

If a settlement is not reached the strike is due to take place on July 20, and it has the full support of the six unions concerned, the Transport & General Workers' Union, the National Union of General & Municipal Workers, the National Union of Vehicle Builders, the National Union of Railwaymen, the Electrical Trades Union and the Amalgamated Engineering Union.

The Employers have offered 3s. a week increase, the last pay increase being 5s. a week, granted last November. Representatives of the unions were to see Sir Wilfred Neden, the Chief Industrial Commissioner, and colleagues on Thursday of this week. Representatives of the employers will also visit the Ministry, probaly next Monday. The Ministry is concerned to see whether it is possible to bring the two sides together with any hope of making progress towards a settlement.

Difficulties have also arisen in connection with the rates of pay of employees in municipal bus and tram undertakings. The municipal undertakings offer of an increase of 7s. 6d. a week has been rejected by the unions, who are seeking an increase to make the rates of pay of the staff concerned comparable with those of other municipal employees.

Parliamentary Notes

Welfare of Railwaymen

The Opposition initiated a debate of protest against Government delay in implementing the recommendations of the Gowers Report in the House of Commons on June 25, and, with particular reference to the welfare of railway workers, Mr. R. A. Butler, the Home Secretary, said: "Working conditions on the railways have been considerably improved in recent years as a result of the progressive policy of the B.T.C., to which I would like to pay tribute. The original Joint Welfare Advisory Council was established in 1948. This drew up an agreement about the kinds of standards which should be aimed at in railway premises. . . . In any new installation staff amenities of a high standard will automatically be incorporated, and that ties up with what I have said about new buildings having almost as much effect as legislation. Existing installations are being improved so far as the present financial and economic circumstances premit. . . .

"A recent analysis of welfare expenditure shows that the annual expenditure, which was about £1,500,000 a year during 1951-54, has risen in 1955 to nearly £1,900,000, and in 1956 to over £3,000,000. The Commission expects to maintain expenditure on welfare on at least this level during the next five years."

Mr. David Jones (The Hartlepools—Lab.) said on behalf of the organised railwaymen that they wanted statutory provisions on the railways, so that minimum standards could be prescribed, to ensure that when the regulations are made they were enforced. Referring to the provisions for look-out men, when men are working on or about the railway lines, he reminded the House that with the modernisation programme and the introduction of diesel engines, electrification, higher speeds and heavier trains, less noise would be created on the permanent way. This made the position of the men working on the line more difficult and dangerous. The position at present was that when the ganger in charge decided a look-out man was necessary, he had to withdraw one of the men from his gang. That was putting an intolerable responsibility on him. This safety regulation ought to be placed fairly and squarely on the B.T.C.

Mr. Robert Carr, Parliamentary Secretary, Ministry of Labour & National Service, said it was possible that the existence of a Bill might, to some extent, change the pattern of the present expenditure on welfare, because the B.T.C. might have to put aside some of the projects already planned to give priority to complying with new legal requirements. From a practical point of view, a Bill had become less urgent with the achievement by the B.T.C. of those much higher levels of welfare expenditure. What they were concerned to see was practical progress going on as fast as possible in the health and welfare conditions of those who worked on the railways.

Questions in Parliament

Speed and Accidents

Mr. Hector Hughes (Aberdeen N.—Lab.) asked the Minister of Transport & Civil Aviation on June 26 if he would make a statement indicating what the experience of his inspectors of accidents has shown to be the most economical way to run railway trains as regards safety; what is the degree of increased risk of accident by running railway trains at high speeds as contrasted with the comparatively smaller risk of accident by running railway trains at smaller speeds; and what is the ratio between speed and risk of accident.

Mr. Harold Watkinson, in a written reply: The experience of the Inspecting Officer of Railways does not suggest that there is direct relation between speed and risk of accident on the railways. This is no doubt because railway engineers and operators (who traditionally demand wide safety margins) meet the demands of speed by raising standards of construction, maintenance and operation, and because the operating staffs respond by increased alertness.

Heat Distortion of Rails

Mr. Hector Hughes (Aberdeen N.—Lab.) asked the Minister of Transport & Civil Aviation on June 26 how many railway accidents during the last 20 years have been found to be caused by the effects of heat operating to buckle the rails or otherwise impair the permanent way or rolling stock; how many of these accidents were caused or contributed to by high speed of the trains; where all these accidents occurred; and what human injuries were caused thereby.

Mr. Harold Watkinson, in a written reply: During the last 20 years there were five serious accidents caused by the heat of the day. All were derailments due to distortion of the rails. The accidents were at Bletchley, Wath Road, Merstham Quarry Tunnel, Tollerton, and Abington. Eight person were killed and 135 were injured. Speed contributed in the sense that the accidents might not have occurred if the trains had been travelling very slowly.

Contracts and Tenders

Railway equipment required for South Africa, the Sudan, India, Australia, and Greece

A. E. Goodwin Limited, of Auburn, N.S.W., has received an order for 10 2,000-b.h.p. Alco-type diesel-electric locomotives from the New South Wales Government Railways. Delivery is about to commence.

Booth Brothers, of Whyalla, South Australia, has received from the Commonwealth Railways an order for 24 ballast hopper wagons of welded steel construction, at a price of about £A.43,000.

British Railways, Eastern Region, have placed the following contracts:—

J. L. Kier & Co. Ltd., Westminster, London, S.W.1: renewal of wall at south end of Instones Wharf, Bow Creek, Canning Town

Constable Hart & Co. Ltd., Richmond, Surrey: resurfacing of roadways in the Kings Cross, Stratford, and Peterborough districts

Roadworks (1952) Limited, Ipswich: resurfacing of roadways in the Ipswich and Cambridge districts

Modern Paviors Limited, Shipley: resurfacing of roadways in the Sheffield and Doncaster districts

R. Ridd & Son (Contractors) Ltd., Hornchurch, Essex: Cleaning and painting of goods yard, warehouse, fruit bank, offices, mess-rooms, stores and sundry works at Bishopsgate Goods Depot

Hunting Aerosurveys Limited, Boreham Wood, Herts: aerial survey of railway tracks, works and property together with adjacent lands between 30½ mile post north of Bishops Stortford Station and 72½ mile post north of Ely Station

W. & C. French Limited, Buckhurst Hill, Essex: reconstruction of superstructures of overbridges Nos. 1897, 1898, 1899, 1902 and 1905 between Hoe Street and Highams Park Stations.

British Railways, North Eastern Region, have placed the following contracts:—

Arundel (Contractors) Limited, Bradford: cleaning and painting of station premises and signalboxes between Chaloners Whin and Altofts Junction

J. R. Rutherford & Sons Ltd., Newcastle-upon-Tyne: alterations and extensions to British Railways Staff Association Club premises at Walkergate

J. H. Eblett, Newcastle-upon-Tyne: cleaning and painting of railway premises, Blyth North and South

Turnerised Roofing Co. (G.B.) Ltd., London: turnerising roof slating Batley Goods Warehouse (electric shed)

Edward Curran Engineering Limited, Cardiff: provision of Curran continuous twin chamber washing machine, Darlington Locomotive Works Diesel Engine Repair Shop

J. R. Rutherford & Sons Ltd., Newcastle-upon-Tyne: external and internal treatment of roof and ceiling to prevent condensation, Newcastle Central Station canteen.

The Special Register Information Service, Export Services Branch, Board of Trade, has received a call from Greece for a railway turntable, full details of which can be obtained from the Branch (Lacon House, Theobalds Road, W.C.1).

The issuing authority and address to which bids should be sent is the Office of the State Procurements Service, Ministry of Finance, Kingdom of Greece, 56 Panepistimiou Street, 3rd Floor, Athens. The tender No. is 408. The closing date is July 17, 1957. A copy of the tender documents is available for loan to United Kingdom firms on application to the Branch. A photo-copy set of the English text contained in the documents can be purchased from the Branch for 3s. Cheques and postal orders should be made payable to the Principal Accountant, Board of Trade. Firms wishing to collect photo-copy sets of tender documents are advised to notify the Branch in advance of their requirements. The reference ESB/15862/57 should be quoted in any correspondence with the Branch.

The Special Register Information Service, Export Services Branch, Board of Trade, has received a call from India for horn cheeks and buffer springs as follows:—

(a) 2,400 horn cheeks, C.1., B.G., type No. 1, to ex. N.S.R. drg. No. WM.8885, alt. 1 (D.G.S. & D. No. 10597/1) item A of specn. 1S-210-50 grade 17 (TEN/26587)

(b) 2,532 buffer springs, 1.R. with steel insertion to CME, ex. B.N. Rly. drg. No. 10383 (D.G.S. & D. No. 7921) to I.R.S.S. No. R-20/50 with correction No. 1 of 10/52 and No. 2 of 4/56 (TEN/26588)

The issuing authority is the Director General of Supplies and Disposals. The tender Nos. are (a) P/SRI/17782-G/I, and (b) SRIA/16309-H/IV. Bids should be sent to the Director General of Supplies and Disposals, Shahjahan Road, New Delhi. The closing dates are (a) July 12, 1957, and (b) July 10, 1957. Sets of tender documents, including drawings but not specifications, are available for loan to United Kingdom firms on application to the Branch (Lacon House, Theobalds Road, W.C.1). Local representation is essential. The references (a) ESB/15667/57, and (b) ESB/15668/57 should be quoted in any correspondence with the Branch.

The Special Register Information Service, Export Services Branch, Board of Trade, has received a call from South Africa for a large quantity of boiler barrel and firebox sets, full details of which can be obtained from the Branch (Lacon House, Theobalds Road, W.C.1) quoting reference ESB/14303/57.

The Special Register Information Service, Export Services Branch, Board of Trade, has received a call from South Africa for 650 superheater elements to specn. CME.18/1952 and drawing L.9500.

The issuing authority is the Stores Department, South African Railways. Bids in sealed envelopes, endorsed "Tender No. H.6577 Superheater Elements," should be addressed to the Chairman of the Tender Board, South African Railways, P.O. Box 7784, Johannesburg. The closing date is July 26, 1957. A copy of the tender documents, including specification and drawings, is available for loan to United Kingdom firms on application to the Branch (Lacon House, Theobalds Road, W.C.1). The reference ESB/15300/57 should be quoted in any correspondence with the Branch.

The Special Register Information Service, Export Services Branch, Board of Trade, has received a call from India for 500,000 liners for railway track. The issuing authority is the Director General of Supplies and Disposals. The tender No. is WPI/18111-H/II. Bids should be sent to the Director General of Supplies and Disposals, Shahjahan Road, New Delhi. The closing date is July 11, 1957. A set of tender documents, including drawing, is available for loan to United Kingdom firms, on application to the Branch (Lacon House, Theobalds Road, W.C.1). The reference ESB/15167/57 should be quoted in any correspondence with the Branch.

The Special Register Information Service, Export Services Branch, Board of Trade, has received a call from Sudan for light railway track and accessories as follows:—

(*a*) 100 km. of light railway track, consisting of 200 km. of new flat bottom steel flanged rails weighing 35 lb. per yd. to British Standard, revised section, in lengths of 30 ft. with up to 5 per cent shorts in pairs of equal length if rolled with two holes in each rail end. Rails may be normal light rail quality to German specification D.N/5901 with a weight tolerance of ± 6 per cent.

(*b*) The requisite quantity of fishplates to suit the rails, the fishplates weighing approximately 4.2 kg. per pair, each fishplate with four holes.

(*c*) 100,000 bolts and nuts, size 2½ to suit fishplates.

(*d*) 650,000 black steel tirefonds ⅝ in. dia. × 5 in. long, weight per hundred 55 lb. to suit the above rails.

Tenders in sealed envelopes marked "Light Rails and Accessories" should be addressed to the Asst. General Manager (Supplies), The Sudan Gezira Board, Barakat. The closing date is July 20, 1957. The price should be quoted on f.o.b. basis from country of origin. The delivery should be ex-works in the period May-September, 1958. The method of payment should be suggested by tenderers, also indicating whether payment in local currency is acceptable. The Board reserve the right to inspect all materials and finished articles and to carry out any tests as may be necessary. Any materials or finished articles which may be rejected should be replaced without additional payment. The successful tenderer will be required to pay immediately on notification a deposit of two per cent of the total value of contract awarded either by certified cheque or bank letter of guarantee, which will be released on satisfactory completion of the contract. The reference ESB/14867/57 should be quoted in any correspondence with the Branch (Lacon House, Theobalds Road, W.C.1).

The Special Register Information Service, Export Services Branch, has reported that the Controller of Stores, Sudan Railways, Atbara, invites tenders for the supply of 2,000 standard carriage and wagon tyres, to drawing No. 408/2986, in class D steel, B.S. report 24, specification 5, 1942.

A copy of the relative drawing can be obtained on application from the Office of Controller of Stores, Sudan Railways, Atbara. Prices should be quoted on c.i.f. Port Sudan basis. Tenders accompanied by a deposit of 2 per cent, should reach the

Office of Controller of Stores, Atbara, not later than July 17, 1957, in a sealed envelope marked "Tender for C.&W. Tyres." The reference ESB/14970/57 should be quoted in any correspondence with the Branch.

The Special Register Information Service, Export Services Branch, Board of Trade, has received a call from Australia for track relays as follows:—

150 track relays, two-position, two-element, six front and two back independent contracts

The issuing authority is the Victorian Railways. The tender No. is Contract 61,169. Bids should be sent to the Secretary of Victorian Railways, Railways Administrative Office, Spencer Street, Melbourne. The closing date is July 17, 1957. A copy of the tender documents is available for loan to United Kingdom firms on application to the Branch (Lacon House, Theobalds Road, W.C.1.). A photo-copy set can be purchased from the Branch for 7s. Cheques and postal orders should be made payable to the Principal Accountant, Board of Trade. Firms wishing to collect photo-copy sets of tender documents are advised to notify the Branch in advance of their requirements. Local representation is not essential. The reference ESB/15803/57 should be quoted in any correspondence with the branch.

The Special Register Information Service, Export Services Branch, Board of Trade, has received a call from India for a large quantity of steel tyres for locomotives and trucks, full details of which can be obtained from the Branch (Lacon House, Theobalds Road, W.C.1.).

The issuing authority is the Director General of Supplies and Disposals. The tender No. is SRIA/MISC/T&A/57/1. Bids should be sent to the Director General of Supplies and Disposals, Shahjahan Road, New Delhi. The closing date is July 18, 1957. A set of tender documents, including drawings is available for loan to United Kingdom firms on application to the Branch. Local representation is essential. The reference ESB/16082/57 should be quoted in any correspondence with the Branch.

HACKBRIDGE & HEWITTIC ELECTRIC CO. LTD. RESULTS.—Through reduction of the final payment to 15 per cent from 17 per cent the Hackbridge & Hewittic Electric Co. Ltd. is cutting the ordinary dividend for the year ended March 31 to 20 per cent from 23 per cent for 1955-56. Group trading profits fell by £94,416 to £439,663, due, it is stated, to the inability to recover higher costs of manufacture.

ROAD CASUALTIES.—The Duke of Edinburgh has sent a message in support of the "Road Safety Matters" Campaign to Mr. Harold Watkinson, Minister of Transport & Civil Aviation, expressing his support for the campaign, and emphasising the importance of every possible step to prevent accidents. The campaign, which opened on July 1, is being run by the Ministry of Transport & Civil Aviation, the Scottish Home Department, the Royal Society for the Prevention of Accidents, and local authorities throughout the country, and will cover the months of July, August, and September. Thirteen fewer people were killed this May on the roads of Great Britain than in May of last year, and 1,779 fewer were injured.

Notes and News

Serious Collision in U.S.A.—Six persons are reported to have been killed and 22 injured when a freight train ran into the side of a Florida-bound passenger train on June 30 near Guthrie, Kentucky, on the Louisville & Nashville Railroad. The passenger train was part of the way over a crossing when the freight train, the brakes of which had apparently failed to act, struck it at right-angles.

Awards for Securing Traffic.—Cash awards for securing traffic to rail are being offered to enginedrivers, firemen, workshop staff, signalmen and all other members of the London Midland Region staff who are not engaged on such business as part of their normal duties. In a personal message from the Chief Commercial Manager it is stated that if each London Midland Region employee obtained just one wagon load of traffic or four second class journeys of more than 175 miles, the receipts of the Region would benefit by £2 million.

Turner & Newall Limited.—With regard to the forthcoming issue to the ordinary stockholders of one new ordinary stock unit of £1 for each such unit now in issue, notices have now been issued by Turner & Newall Limited to its ordinary stockholders in respect of an extraordinary general meeting to be held in Manchester on July 4, 1957, so that the appropriate resolutions can be submitted for the purpose of increasing the authorised capital of the company and approving the capitalisation and application of reserves now contemplated.

New Type of Pedestal Poster Fitting.—The accompanying illustration shows a new type of pedestal poster fitment provided in the booking hall at Putney Station, Southern Region. This unit was designed to take the place of pedestal boards, resulting in six double royal posters being exhibited as against two on a pedestal stand. As indicated in the picture the poster boards slide into grooves and so allow posting to be done away from the fitment. When not in use the wings fold and collapse.

Pedestal poster fitment in booking hall at Putney, Southern Region

New Spanish Line Opened.—An 88-mile section of railway on the Zamora-Corunna line was inaugurated by General Franco this week. The section runs from Puebla de Sanabria to a point near Orense, in Galicia. When completed the line will reduce the railway distance between Madrid and Corunna by some 125 miles.

Indian Import Licences Suspended.—The Indian Government has announced a three-month suspension of all import licences with effect from July 1. The reason given is the difficult foreign exchange situation. The next licensing period will commence on October 1, and details of the new policy to be adopted are expected to be announced late in September, when, the Ministry of Commerce explains, a clearer picture regarding foreign exchange resources is likely to be available. Certain imports will continue in the interim period and there is provision for six-monthly licences to be extended.

Trespassing Children on Railway Line.—At Grays Juvenile Court recently, 22 boys and girls were accused of trespassing or causing obstruction on the railway line and of throwing stones at a passing train. One boy was fined 15s. for throwing stones and 21 children were given a conditional discharge and each was ordered to pay 10s. costs for trespass or obstruction. The parents were bound over in the sum of £5 for 12 months for their children to be of good behaviour. It was stated in court that children trespassing made one section of line a "nightmare ride" for train crews, and some crews threatened to refuse to run over the line.

Institute of Transport Week-end Course at Ashridge.—A week-end course on a transport subject has again been arranged by Ashridge in conjunction with the Institute of Transport. This has become in recent years an annual feature of the programmes both of the College and of the Institute. The subject of the course this year will be "Problems of Management in Transport," and will follow the usual Ashridge pattern of lectures and discussions. The programme will be opened on Friday evening, July 12, by the President-Elect of the Institute, Sir Reginald H. Wilson, and will terminate at breakfast time on Monday, July 15. Enquiries and applications to attend the course should be made to the Secretary, Ashridge, Berkhamsted, Herts. The inclusive fee for the week-end is four guineas, and the course is not restricted to members of the Institute but is open to the public, including ladies.

New Medical Department at Eastleigh Carriage & Wagon Works.—A new Medical Department in the Carriage & Wagon Works at Eastleigh was opened on June 25 by Mr. C. P. Hopkins, General Manager of the Southern Region, who was accompanied by Dr. L. J. Haydon, Regional Medical Officer. The single-storey building, constructed by G. E. Prince Limited, of Southampton, to the design of Mr. F. E. Campion, Chief Civil Engineer of the Southern Region, provides a medical examination centre for Dr. T. P. Howkins, Divisional Medical Officer, and also a separate first aid room for the carriage and wagon works. The Eastleigh Medical Division extends from Basingstoke to

Yeovil and also down to Weymouth and Fratton; in this area some 13,000 railwaymen and women are employed, and about half this number attend each year for medical examination. The new first aid room, staffed by two State Registered Nurses, is equipped to deal with all cases of minor injury. Among those present at the opening ceremony were:—Messrs. J. E. Binks, Member of the Southern Area Board; F. J. Pepper, Carriage & Wagon Engineer, Eastleigh; S. A. Finnis, Chief Docks Manager, Southampton; J. Lithgow, Regional Welfare Officer; and Dr. I. A. McDougal, M.O.H. for Hampshire.

Thos. Cook & Son Ltd. Development Programme.—The biggest single undertaking in the modernisation and rebuilding programme of Thos. Cook & Son Ltd., which began with the opening of the new Glasgow office last year, is the raising of the Berkeley-street head office building to seven floors, which will be completed by June next year. Meanwhile it is "business as usual during alterations" for the 2,500 staff under this one roof. The most revolutionary changes are the modernisation works recently completed in Pall Mall, London, and at the Madeleine office in Paris. Other recently modernised offices include two more in London, and the company's main office for Birmingham, besides those in Sheffield, Leeds, Rome, Stockholm, Hamburg, Cardiff, and Luton. New offices are being opened in Blackpool and Manchester, and the Melbourne office is being modernised. A feature of the Pall Mall office is the single pane of glass which has been installed across the whole 20-ft. frontage.

South Wales Ports Traffics.—The Joint Ports Committee of the Industrial Association has received a comprehensive report on the activities of the South Wales Ports. In the first 16 weeks of 1957 there was a decrease in trade of 368,251 tons compared with the corresponding period of 1956. The major part of this total concerned inwards traffic, the principal cargoes affected being coal and coke, fruit and vegetables, oil and spirit, iron and steel goods. Outwards traffic showed increased shipments of coal and coke, tinplate, iron and steel manufactures, but these were more than offset by decrease in shipments of oil and spirit. For the remainder of 1957, it is hoped that importations of iron ore will exceed those of 1956 and that shipments of coal may also show a slight improvement, attributable to increasing shipments of non-National Coal Board coal. The British Transport Commission is installing improved discharging facilities at Barry Dock for dealing with bulk cargoes, in particular scrap.

Southdown Motor Services Problems.—At the annual meeting of Southdown Motor Services Limited on June 27, Mr. R. P. Beddow, the Chairman, stated that the past financial year presented many problems which affected operations. When comparing the past year with the preceding year, it has to be borne in mind that whereas the summer of 1955 was one of almost continuous fine and warm weather, that of 1956 was most disappointing. Further, in the preceding year, passenger loadings appreciably increased during late May and early June, 1955, as the result of a partial rail strike. The total number of passengers carried during the year under review dropped by 4,750,000 to 127,500,000. Following the wages increase granted in November, 1956, and as the cost of such items as tyres, rating demands, materials for vehicle maintenance, and other supplies had increased by some £50,000 per annum, once again a decision had to be made to apply for further fares increases on both stage carriage and express services. The applications were granted as applied for and became operative in February and April, 1957, for stage carriage services, and in June, 1957, for express services.

Moscow-Peking via Mongolia.—A report from China indicates that international through traffic between Moscow and Peking is now routed via the Trans-Mongolian railway. The new route is stated to shorten the overall journey time by 14 hr.

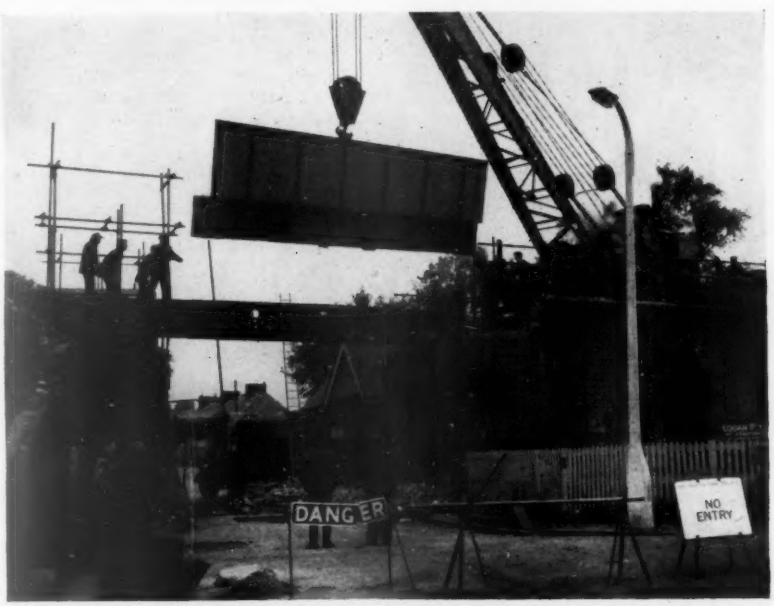
Fulmer Research Institute Open Day.—The Fulmer Research Institute held its 1957 open day on July 2, when guests were invited to inspect the laboratories. Mr. P. Horsfall, Chairman of Almin Limited, the group which founded the institute, welcoming the guests at luncheon, emphasised the importance of the work of the institute, and the progress made since its foundation in 1947. Important recent additions to the equipment include an E.M.3A Electro-microscope, manufactured by Metropolitan-Vickers Electrical Co. Ltd., capable of a range of magnification from 1,000 to 60,000 times under different voltages.

Metropolitan Railway Surplus Lands Progress.—In his circulated statement, Sir Bernard Docker, Chairman, Metropolitan Railway Surplus Lands Co. Ltd., reports continued progress in the year ended March 31, 1957. Gross rents of the parent company have increased by £20,129 to £302,283 and after charging repairs and other expenses, net rents at £232,896 showed an increase of £15,585 over the figure for the previous year. Net profit before tax for the past financial year at £259,645 shows an increase of £24,487. An increase in dividend to 6½ per cent, against 6 per cent for 1955-56, is recommended. After providing £98,704 for the payment of this dividend and £158,600 for tax, the company is left with £60,404 carried forward compared with £58,063 brought forward from the previous year.

Talyllyn Railway Colour Transparencies.—A start has been made on the preparation of a set of colour transparencies of scenes on or near the Talyllyn Railway and the first four are now available. Series 101 shows No. 6 on a down train at Rhydyronen and No. 2 on a down train at Dolgoch. Series 102 shows No. 3 on a down train after arrival at the Wharf and a view of Talyllyn Lake. Each series costs 5s. 6d., postage extra, and single transparencies cannot be supplied. These transparencies can be obtained from T. W. Robertson, 23, Portway, Ewell, Surrey, or from R. K. Cope, Brynglas, Beckman Road, Pedmore, Stourbridge, Worcs.

North Central Wagon & Finance Co. Ltd.—The annual meeting of the North Central Wagon & Finance Co. Ltd. was held in Rotherham on June 25. Mr. E. Duncan Taylor, the Chairman, presided. In his circulated statement, the Chairman stated that as a result of hire purchase restrictions new business accepted during 1956 declined by 29 per cent resulting in a reduction of £3,248,638 in the book value of assets which were £16,482,550 at December 31, 1956. As earnings on hire purchase business are spread over the life of the agreements the substantial business accepted in 1954 and 1955 resulted in a record profit for the year. A total dividend on the ordinary shares of 1s. 6d. per share was recommended as compared with 1s. for 1955. In addition, the distribution of

Pre-electrification Work in the Eastern Region



Removing old bearer girder during reconstruction of Turkey Street bridge, Forty Hill, Enfield, preparatory to electrification of the Churchbury Loop line

7½d. per ordinary share, not subject to tax, but of realised accretions to capital was to be repeated. For the first four months of 1955 the group turnover increased by 55 per cent as compared with the corresponding months of 1956. The report and accounts were adopted.

Keith Blackman Limited Results.—The ordinary dividend of Keith Blackman Limited is held at 15 per cent for the year ended March 31 last. Profits for the year were £342,239, before tax of £190,845. No comparative figures are given because of the consolidation of accounts after the acquisition of Blackman Export, a subsidiary company.

British Railways Offer Work to Hungarians.—Hungarian refugees who are unable to obtain work in Derbyshire coal mines are being offered jobs by the London Midland Region of British Railways. The men will be employed on permanent way work. The main difficulty is stated to be to find men who can speak English or who can act as interpreters for gangs of Hungarians. Other Regions of British Railways also would welcome Hungarian refugees for permanent way work.

Transport Tribunal Resumes Fares Hearing.—The Transport Tribunal resumed on July 2 the hearing of the B.T.C. application for increases in certain British Railways and London Transport fares. Mr. P. G. James, Chief Financial Officer of London Transport, stated that it was budgeting for £900,000 surplus, to act as a cushion against future increases in costs. The reason was that there would be a time lag before it could again go to the Transport Tribunal to ask for an increase in fares to offset any additional expenditure. The hearing had been adjourned on May 30 to enable objectors to study the Commission case. There are 41 objectors. If the application were approved the Commission would obtain additional annual revenue of £4,500,000 from London Transport and £1,200,000 from British Railways London lines. Mr. E. S. Fay, Q.C., for the Commission, said yesterday that since the adjournment the Commission expenses had been materially affected by the recently announced increase in coal prices. The hearing was adjourned.

Forthcoming Meetings

Open currently and until further notice.—British Transport Commission: Historical Exhibition "Transport Treasures" in Shareholders' Meeting Room, Euston Station, from 10 a.m. to 6 p.m. on weekdays, and 2 to 6 p.m. on Sundays. Admission 6d.

July 6 (*Sat.*).—Railway Correspondence & Travel Society, East Midlands Branch. Denton Mines rail tour.

July 6 (*Sat.*).—Permanent Way Institution, London Section. Joint visit to Chesterton Junction Welding Depot, Eastern Region, with East Anglia Section members; visit for ladies to colleges in Cambridge.

July 6 (*Sat.*).—Railway Correspondence & Travel Society. Reseau Breton rail tour, leaving Waterloo at 6.35 p.m. on Friday, July 5.

July 13 (*Sat.*) to July 20 (*Sat.*).—University of Birmingham Department of Extra-Mural Studies, residential course on canal and railway history, at Preston Montford, near Shrewsbury.

Railway Stock Market

Speculation rather than investment has been featured in stock markets this week, by the extraordinary activity in stores shares touched off by take-over moves and vague talk of more to come. This blaze of activity had tended to mask the bigger and vital problems which are forming the serious talking points in the City, in particular the further stimulus to inflation dangers let loose by the latest increase in the price of coal, Annual reports from companies in nearly all industries these days refer to the growing problems arising from increased costs, and many, notably Imperial Chemicals, have had to abandon the price freeze on products started last year. With the inflation problem well in the picture again, doubts are growing whether a reduction can now be expected in the bank rate this year. This has played an important part in the uncertainty ruling in British Funds, though there has been some slight recovery from the sharp falls recently recorded.

Among railway stocks, Nyasaland Railways shares were again active, and have risen further on balance from 12s. to 12s. 6d. in response to the raising of the dividend from 3½ per cent to 5 per cent, which was in accordance with best expectations. In fact, a railway increasing its dividend is something of a unique achievement these days.

Canadian Pacifics eased to $67⅞xd., while the 4 per cent preference stock and 4 per cent debentures were £53¾xd. and £65¼ respectively. White Pass shares moved slightly lower at $22.

There was rather less business reported in Antofagasta ordinary stock, which has receded from 36½ a week ago to 34½, while the preference stock eased fractionally to 44½ and the 4 per cent Bolivia debentures were a point down at 93½.

In other directions, San Paulo 3s. units changed hands around 3s. 7½d. Elsewhere, United of Havana income stock improved slightly from 8¼ to 8½ and the consolidated stock was 2¼. Mexican Central debentures held at 65, Taltal Railway shares were quoted at 12s. 6d. and Brazil Railway bonds at 7. Chilean Northern debentures held steady at 44½ and Cost Rica ordinary stock at 24. International of Central America shares and preferred stock continued to be quoted at $47½ and $185 respectively. Dorada ordinary remained at 58½.

Beyer, Peacock 5s. shares continued active around 11s., sentiment having been helped by the latest evidence of the plan to widen the group's interests.

North British Locomotive were again an active feature, but compared with a week ago, have reacted from 20s. 6d. to 19s. 3d. Hurst Nelson strengthened from 36s. to 36s. 3d. and Birmingham Wagon were prominent with an advance on balance from 17s. 10½d. to 19s. 10½d. Gloucester Wagon 10s. shares at 16s. 3d. compared with 16s. a week ago, and Wagon Repairs 5s. shares eased slightly to 13s. 9d. Charles Roberts 5s. shares were 12s. 7½d. and Westinghouse Brake 39s. 3d.

A feature has been the continued demand for British Oxygen, which advanced afresh from 37s. 6d. to 39s. on further recognition of the good yield and the group's expanding business. In other directions, G. D. Peters were again quoted at 27s. 6d. and British Timken at 63s. 3d. Renold Chain rallied to 38s. 9d. after an earlier decline, and F. Perkins 5s. shares remained at 15s. 4½d. Associated Electrical came back from 64s. a week ago to 61s. 9d. and General Electric from 55s. 9d. to 54s.

OFFICIAL NOTICES

REQUIRED by British Railway Company operating in Chile and Bolivia: CHIEF STORES SUPERINTENDENT. DISTRICT CIVIL ENGINEER, ASSISTANT RUNNING SUPERINTENDENT, CLERK FOR ACCOUNTS DEPARTMENT, PREFERABLY WITH EXPERIENCE OF MECHANISED ACCOUNTING. Sterling salary, allowances, retirement benefits, free quarters, passages home, leave, etc. Write to Box No. 991, c/o Charles Barker & Sons Ltd., Gateway House, London, E.C.4.

MINISTRY OF TRANSPORT AND CIVIL AVIATION: ASSISTANT RAILWAY EMPLOYMENT INSPECTOR. The Civil Service Commissioners invite applications from men for this pensionable post in Glasgow (initially in London for several months). Duties, to investigate accidents to railway servants and make recommendations for prevention of similar accidents. Age at least 35 on 1st July, 1957. Candidates must have at least ten years' experience of practical railway service and have a sound knowledge of British railway operation and maintenance. They must have had wide mechanical experience, including experience of locomotive running, outdoor machinery maintenance, and carriage and wagon repairs. A sound judgment and ability to write clear and concise reports essential. Salary scale £955—£1,160. Prospects of promotion. Further particulars and application forms from Civil Service Commission, Scientific Branch, 30, Old Burlington Street, London, W.1, quoting number S4725/57/8. Completed applications should be returned by 26th July, 1957.

THE Nigerian Railway Corporation invites applications for appointment as TRAIN LIGHTING FOREMAN. *Salary:* £700 × £50—£1,200 p.a., plus £300 p.a. Overseas Pay. Commencing salary will be according to qualifications and experience. *Qualifications:* Candidates must be capable of taking charge of the staff and all Train Lighting matters in a District, including maintenance and repair of all coach electric equipment, dynamos, batteries, control gear, water raising apparatus, etc., and will be expected to train staff in all related matters, including armature winding and other repairs. A knowledge of diesel and petrol engines and refrigerators would be an advantage. Appointments on pensionable terms, or on contract carrying a gratuity of 20 per cent. of total emoluments per annum. Terms of service provide for tours of fifteen months each, seven days' full pay leave per month of service, free passages for officer and wife and separate domicile allowance £75 p.a., each in respect of maximum of two children while in U.K. or cost of their passages to and from Nigeria, if under 18 years of age. Part furnished quarters provided at low rental. Outfit allowance £60, payable on first appointment. Applications to be addressed to: The London Representative, Nigerian Railway Corporation, 11, Manchester Square, London, W.1.

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BRITISH RAILWAYS

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